The Development of a Research Culture in Tanzania's Higher Education System

Daniel Sidney Fussy

B.Ed. (Hons); M.A (Ed.) University of Dar es Salaam

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School of Education

College of Social Sciences

University of Glasgow

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Abstract

The study reported in this thesis investigated approaches which the higher education sector in Tanzania employs to develop a research culture, and explored views on how to improve the research capacity within Tanzanian universities. A qualitative-multiple case study informed by interviews, focus group discussions and documentary review methods facilitates the data collection process. Six research sites including the Ministry of Education, the Tanzania Commission for Universities and four leading universities were involved in the study. Purposive and stratified sampling techniques were used to recruit participants from the group of senior government officials, senior university leaders, academic staff members and postgraduate students. The selected Stufflebeam's CIPP framework guided the conduct of the study, as well as the discussion and interpretation of the findings.

The findings show that the Tanzanian higher education policy context has feasible policies and plans that support the development of research in the country's universities. However, the higher education policy context lacks proper mechanisms to engender practical development and the monitoring of research. Moreover, the approaches used to develop research, although reported to improve institutional research profile, were found to be less demanding in enforcing the research culture. The findings also identified factors essential in building a research culture, such as research training, research mentoring, research funding and research incentives, which serve as a framework for universities and researchers across Tanzania, Africa and the world, to guide their decisions and actions towards promoting successful research cultures.

The study, therefore, concludes that Tanzania needs to develop a deep-seated research culture within its higher education system to improve the production and application of knowledge, and eventually realise the National Development Vision 2025 that the country envisages, to advance from 'less developed' country status into a respectable 'middle-income' country. In so doing, the study recommends a reform of the national higher education policy to bridge the gap between policy articulations and implementation on the ground.

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Dedication

This thesis is dedicated to my beloved mother: Mariana Gondwe, my lovely wife: Gaudensia Elisha, and my son: Dervin. They sowed the seeds that germinated to produce many fruits, including the completion of my PhD.

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Author's Declaration

I declare that, except where explicit reference is made to the contribution of others, this thesis is the result of my own and independent work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Daniel Sidney Fussy

Abbreviations

BIS	Department for Business, Innovation and Skills
BRICS	Brazil, Russia, India, China and South Africa
CIPP	Context, Input, Process, and Product
CODESRIA	Council for the Development of Social Science Research in Africa
COSTECH	Tanzania Commission for Science and Technology
DAAD	German Academic Exchange Service
DANIDA	Danish International Development Agency
DFID	Department for International Development
EBL	Enquiry-Based Learning
EFA	Education for All
ERA	The Excellence in Research for Australia
ESAURP	Eastern and Southern African Universities Research Programme
ESRC	Economic and Social Research Council
ETP	Education and Training Policy
FAWE	The Forum for African Women Educationalists
FECTARP	Framework towards Enhancing Chinese TEFL Academics' Research Productivity
FEM	Fennoscandian Exploration and Mining
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
HCT	Human Capital Theory
HEAC	Higher Education Accreditation Council
HEIs	Higher Education Institutions
HEP	Higher Education Policy
HESLB	Higher Education Students' Loans Board
HKUGC	Hong Kong University Grants Committee
ICT	Information and Communication Technology
IDRC	International Development Research Centre
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
KBE	Knowledge-Based Economy
LDCs	Least Developed Countries
MAXQDA	Qualitative Data Analysis Software
MoEVT	Ministry of Education and Vocational Training
MU	Mzumbe University

NACTE	National Council for Technical Education
NEPAD	New Partnership for Africa's Development
OECD	Organisation for Economic Co-operation and Development
OSSREA	Organisation for Social Science Research in Eastern and Southern Africa
PBRF	Performance-Based Research Fund
QAA	Quality Assurance Agency for Higher Education
RAE	Research Assessment Exercise
R&D	Research and Development
REF	Research Excellence Framework
REPOA	Policy Research for Development
RS	Research Site
SAPs	Structural Adjustment Programmes
SAUT	Saint Augustine University of Tanzania
SIDA	Swedish International Development Co-operation Agency
SPSS	Statistical Package for Social Sciences
TCU	Tanzania Commission for Universities
TEA	Tanzania Education Authority
TUMA	Tumaini University Makumira
UDSM	University of Dar es Salaam
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund
UNISA	University of South Africa
URT	United Republic of Tanzania

1 Introduction

1.1 Background to the study

The cornerstone of a successful higher education system, seeking both to produce ground-breaking knowledge and provide quality education, and in turn, foster the socio-economic growth of a nation, is research. As a result, research increasingly sits at the top of global, regional and national policy agendas, and now constitutes a high-stake undertaking for universities (Leathwood & Read, 2013; Cloete, Bunting & Maassen, 2015; Shin & Lee, 2015; Hladchenko, de Boer & Westerheijden, 2016).

The World Declaration on Higher Education in the 21st century (UNESCO, 1998, 2015), for example, insists that higher education institutions (HEIs) should undertake research as an integral part of their respective missions. Similarly, the World Bank's reports – *Constructing Knowledge Societies* and *Accelerating Catch-Up* (World Bank, 2002, 2008) – urge developing countries to improve university research in order for sustainable development to emerge. Support for university research can also be observed through different countries' development strategies, education policies and official speeches from the ministries of education. Countries such as the United Kingdom, Australia, Hong Kong, South Africa and New Zealand have, in recent decades, instituted policies that link higher education funding to institutional research performance, as a measure of the growing significance of research.

Research receives much emphasis and attention in global, regional and national policy agendas and reforms, because it is central to the facilitation of the effective engagement with the teaching and community service functions usually performed by universities. In fact, research produces and preserves knowledge; teaching transmits this knowledge to develop skilled personnel; and community service transfers and applies the knowledge to improve productivity and the standard of living – knowledge valorisation. Thus, for the two functions of teaching and community service to be effectively performed, knowledge must be present; it is the function and duty of research to produce and advance this knowledge.

Moreover, research has a role to play in the growth and development of higher education institutions (HEIs) and nations. Research at HEIs attracts funding, international students, and is a source of institutional and national prestige (Russell Group, 2012; Wadesango, 2014; Teferra, 2016). Research is also vital for driving socio-economic development of a nation, particularly within the present increasingly globalised and competitive knowledge-intensive world, where knowledge has now become a fulcrum of other production factors: labour, land and capital (see Chapter 2).

Although research appears central to higher education and considered crucial for the socio-economic growth and development of nations, the involvement in research by African universities and academics has been minimal (Cloete *et al.*, 2015; Urama *et al.*, 2015; Teferra, 2016). When compared with other nations and continents, the overall share of the world's research output and researchers that Africa has produced is generally low.

Recent statistics in the *UNESCO's (2015) Science Report: Towards 2030* indicate that Africa, home to 54 nations which constitute 15% of the world's total population, contributes only 2.6% of the world's research output and possesses only 2.4% of the global share of researchers. The overall quantity of researchers and research output produced by Africa – as a continent – is smaller than individual countries within Europe, Asia and America, such as Germany, the United Kingdom, Japan, Canada, Republic of Korea and Brazil, with far smaller population sizes (see Table 1.1).

Table 1-1 World Share of Scientific Publications and Researchers

Country/Continent	World share of publications (%)	World share of researchers (%)	World share of population (%)
Germany	7.7	4.6	1.1
United Kingdom	6.9	3.3	0.9
Japan	5.8	8.5	1.7
Canada	4.3	2.1	0.5
Republic of Korea	4.0	4.1	0.7
Brazil	2.9	2.0	2.8
Africa	2.6	2.4	15

Source: UNESCO (2015, pp. 32-36)

Table 1.1 shows that Germany shares 7.7% and 4.6% of the world's research output and number of researchers, respectively, with only 1.1% of the world's total population. Japan possesses 5.8% and 8.5% of the global share of research

output and researchers, respectively, with a global population of 1.7%. Moreover, Canada whose contribution to world's total population is only 0.5%, accounts for 2.1% and 4.3% share of the world's research output and researchers. These statistics show that Africa is at the tail-end of the global figures of researchers and research output when compared to its European, Asian and American counterparts.

The most disadvantaged region for the lowest performance in research among the 54 African nations is sub-Saharan Africa, where Tanzania belongs. Harle (2010, p.6) stresses that "Research in sub-Saharan Africa is commonly noted to be relatively low, both compared with other parts of the world and also relative to the number of institutions and the academics that they employ." Statistically, the world's research output of sub-Saharan Africa, home to 48 nations, is no more than 1.4% (UNESCO, 2015).

Paradoxically, sub-Saharan Africa has low levels of research when it urgently needs such research to improve its economic conditions and catch-up with the world's leading and emerging economies. Incidentally, sub-Saharan Africa has remained the world's only region with soaring numbers of people living in abject poverty (Urama *et al.,* 2015). Sub-Saharan Africa accounts for over 70% of the 48 nation-states in the world, dubbed Least Developed Countries (LDCs) by the United Nations Conference on Trade and Development (UNCTAD) in its recent 2014 review (UNCTAD, 2014).

The low level of involvement of African academics in research also impacts the provision of quality education both at the university and other levels of education. As such, the question of currency, relevance and availability of knowledge for the teaching and learning process becomes an issue of grave concern within African countries. As experienced by the author of this study, both as a student and a member of academic staff (see section 1.2), as well as reported by other authors such as Trotter *et al.* (2014) and Fredua-Kwarteng (2015), rote learning is a typical phenomenon in many African university classrooms. In lecture halls, students tend to jot down verbatim the professor's lecture, which they then try to memorise and frantically reproduce in their examinations. This situation is largely attributable to the scarcity of textbooks.

Usually, the textbook that the professor uses to lecture and write notes on is the only textbook that exists (Tao, 2013; Anangisye & Fussy, 2014).

By and large, African universities are primarily consumers and users of scientific knowledge produced elsewhere, particularly in developed economies. If the trend of neglecting research in Africa continues, African universities will continue to depend upon imported knowledge solely. This has clear implications for the promotion of African authorship and construction of a base for the continent's intellectual life and economic independence, as much of the knowledge produced by and imported from developed nations is not entirely relevant to the developing world, as it usually overlooks the peculiarities of individual developing countries.

Higher education researchers have consistently advocated for the development of research within universities (Altbach, 2013; Harle, 2013; Cloete *et al.,* 2015; Nguyen, 2016; Teferra, 2016). They particularly refer to "new universities" with a limited research tradition (e.g., those in sub-Saharan Africa – see Chapter 2), and which need to build a research culture in order to bolster research productivity. Based on the literature review in relation to the present study (see Chapter 3), it seems that the area of research culture in higher education both locally (in the African context) and globally, is an emerging field of study. Accordingly, a critical scrutiny of available literature indicates that research culture in higher education generally remains an under-examined topic (Evans, 2007; Nguyen, 2016). This implies that there are still a number of limitations in the prior research conducted in this area.

Some of the studies offer theoretical suggestions regarding building a research culture (e.g., Lewis & Simmons, 2010; Ridley, 2011; Altbach, 2013; Asikhia, 2013; Gerard *et al.*, 2013; Shin, 2013). Empirically based studies that have been undertaken are mainly small in scale, despite employing mixed methods approaches with a variety of data collection methods to attain valid and reliable findings. These small-scale empirical studies (e.g., Deem & Lucas, 2007; Emiru, 2012; Dessie & Mesfin, 2013; Johnson & Louw, 2014) were particularly conducted at the institutional level and centred on a specific field or discipline – teacher education, business and English language teaching.

Equally, large-scale empirical studies (e.g., with a bigger sample of universities and countries) relied on the interviews (Hazelkorn, 2005; Taylor, 2006; Fenwick, 2012; Edgar & Geare, 2013). The large-scale empirical studies were also predominantly conducted in well-established research-intensive universities in developed countries, e.g., Canada, the United States, the United Kingdom, Australia and New Zealand. What is missing is a similar comprehensive study to paint a composite picture of less research-intensive or aspiring research-intensive universities in developing countries.

Understanding the development of a research culture in higher education worldwide entails taking into account the different characteristics of communities that exist, especially between the developed and the developing world. The implication is that it is imperative to explore a different number of countries in order to develop a composite picture that is representative of the diverse community and operational contexts (Gonzalez-Brambila & Veloso, 2007; Ridley, 2011; Nguyen, 2016; Teferra, 2016). As such, when compared with the extensive body of studies that exist on the topic in Western literature, there is a paucity of studies in sub-Saharan Africa, particularly in Tanzania. From the available literature, this is the first study to be conducted in Tanzania, and its primary research question is: How is Tanzania's higher education sector developing a research culture?

1.2 Motives for the study

Curiosity concerning the focus of this study's topic stems from the researcher's own professional experience. Due to the role research plays in promoting both the teaching/learning process and communities' socio-economic development, as evidenced in developed nations (see Chapter 2), it is reasonable to conclude that research within Tanzanian universities is not accorded the status it deserves (see Chapter 5 and 6). Experience from the researcher's workplace shows that the level of research productivity of the institution is low, with some members of academic staff not producing significant research-based publications over a period of time, despite holding Masters and doctoral degrees. A number of research-based publications is one of the criteria for evaluating and assessing members of academic staff for promotion in the researcher's institution. This

criterion, however, is rarely met by the majority members of academic staff, who then remain in one academic position for a prolonged period of time.

Similarly, the neglect of research is rife in other universities in Tanzania (Makulilo, 2012; Peter, 2014; Bangi & Sahay, 2014), not to mention other universities in sub-Saharan Africa (Harle, 2013; Cloete *et al.*, 2015). While some members of academic staff in Tanzania are less involved in research, the country, as stipulated in its National Development Vision 2025, is seeking to "graduate from [being] a least developed country to a middle-income country by 2025 with a high level of human development, whose people are engrained with creativity and innovativeness to respond to the development challenges and effectively compete regionally and internationally" (United Republic of Tanzania [URT], 2000, p.4). This Development Vision recognises the significance of knowledge in spearheading the country's development. To materialise the 2025 National Development Vision, it is imperative for universities in Tanzania to develop a research culture that is linked to national development prospects. The absence of a research culture – which is defined as philosophies, policies and activities engaged to undertake research on a continuous basis (see section 1.7) – could retard social and economic growth of Tanzania and Africa in general.

Africa and Tanzania in particular could continue to import scientific knowledge and technology, whilst hiring expatriates to solve problems, which could otherwise have been solved by local experts and promote the country's development prospects. The World Bank commissioned research, entitled, *Higher Education and Economic Development in Africa,* for example, maintained that:

> Road-building costs in sub-Saharan Africa are as high as those in OECD countries and are often three times higher than costs in middle-income countries – because of the need to import both equipment and trained expatriate personnel. (Bloom *et al.*, 2006, p.7)

Thus, the researcher embarked on the present study to investigate and critically scrutinise various approaches that Tanzania currently employs to develop a research culture in its higher education sector and offer evidence-based recommendations on best practices that would be considered suitable for Tanzanian context, without compromising international standards.

1.3 Aim of the study and research questions

This study investigated approaches which the higher education sector in Tanzania employs to develop a research culture. In particular, the study sought to answer the following four research questions:

1. How does the national higher education policy context influence the development of a research culture?

2. In what ways do higher education institutions develop a research culture?

3. What challenges do higher education institutions face in developing a research culture?

4. What does the Tanzanian higher education sector need to do to foster a prosperous research culture?

1.4 Significance of the study

Research culture in higher education is an emerging field of study. Judging from the literature review as evidenced in Chapter 3, it appears generally that research culture in higher education as an academic area of study is under-examined and the literature that does discuss this topic is seldom non-Western and broad in perspective. In this regard, as there has been no study of this nature from Tanzania thus far, the present study advances frontiers of knowledge in making an original contribution to higher education literature, particularly in the academic area of research culture. For practical purposes, knowledge and evidence from this study can be used to devise effective policies and practices for future development of research cultures in Tanzania and beyond, particularly in developing countries of similar demographic, with similar social, cultural and economic characteristics to the institutions under study. Moreover, findings from this study also form a basis for further studies on the thematic area of research culture within higher education.

1.5 Historical background of research as a university activity

The world's early universities, established around the 11th and 12th centuries, were largely teaching institutions. Although early university professors such as

Isaac Newton (Cambridge University), Adam Smith and James Watt (University of Glasgow), Joseph Henry (Princeton University) and Galileo Galilei (University of Padua) conducted research in their institutions, they did it for pleasure and primarily in the form of scholarship, as they were seekers of knowledge rather than undertaking research seriously for generating knowledge (Atkinson & Blanpied, 2008; Bement & Diaz, 2011). During this period, universities did not receive research funding from their respective governments as in today's world.

Throughout the period of 12th-18th centuries, universities were evolving and becoming more formal and organised institutions; however, they continued functioning predominantly as teaching institutions until the 19th century, when Prussia (now Germany), transformed radically the purpose of universities from teaching only to research institutions. The year 1809 is traditionally regarded as the founding moment of research universities, when Wilhelm von Humbolt – the then Prussian Minister for Education – established the University of Berlin and began formally to require academic staff to engage in research (Atkinson & Blanpied, 2008; Altbach, 2011; Collini, 2012). On its part, the Prussian government (Germany) supported the Humboldtian model because the model was considered crucial for engendering national development and the realisation of international influence and control.

By 1933, German research universities had enabled the country to train and employ twice as many Nobel laureates as the universities in the United Kingdom and the United States at the time combined (Cloete *et al.*, 2015). In fact, research universities played, and continue to play, a significant role in Germany's higher education development and since then have been an indispensable asset to the nation's industrial and development processes (Atkinson & Blanpied, 2008; Altbach, 2011; Collini, 2012; Shin & Kehm, 2013). The Humboldtian research university model became influential both academically and economically to the extent that other countries such as Britain, Japan and the United States began replicating it in the middle of 19th and 20th centuries. To date, the American and British universities have become the leading research university global models emulated by other nations such as China, Korea, South Africa and Brazil as they struggle to generate their own indigenous models of research universities.

1.6 The concept of higher education

Defining the phrase ‘higher education’ presents a daunting challenge despite it being widely used, as some mistakenly associate it with further education, which also refers to post-secondary education but is not part of higher education. In brief, higher education principally describes post-secondary learning that takes place at universities and colleges, whose courses lead to the award of undergraduate and postgraduate degrees and other professional qualifications (Samoff & Carrol, 2004; Orellana, 2011; Howells *et al.,* 2012). Higher education does not commence and end with the universities. It covers diverse types of institutions: universities, polytechnics and colleges of higher education among them. Moreover, higher education institutions are primarily authorised to offer degree programmes at undergraduate and postgraduate levels that take a minimum of three to four years to achieve completion.

Although a higher education institution is initially recognised as a degree conferment institution, it can also offer other professional qualifications including certificates, diplomas and higher diplomas. Degree programmes offered at these institutions are classified as Undergraduate, which constitute bachelor degrees, and Postgraduate, which is made up of Master and Doctoral degrees. These credentials are universally recognised as representing specialised expertise and skills (Howells *et al.,* 2012). For a higher education institution to be termed higher it must essentially aim at developing graduate attributes and competencies to an individual learner such as valuing multiple perspectives to knowledge and serving communities in reflective, creative and ethical ways (Orellana, 2011; Winch *et al.,* 2014). In this sense, the higher education learning environment usually involves advanced research activities in order to facilitate the development of graduate attributes and competencies among leaners.

In this study, higher education covers diverse types of institutions: university, university colleges, colleges and schools that are legally authorised with the autonomy to confer degrees in various fields. Likewise, the terms higher education institution and university are used interchangeably in this study.

1.7 Conceptualising research culture

The understanding of 'research culture' in the context of this study is important because the concepts forming 'research culture', i.e., 'research' and 'culture' have a broad meaning. Again, the emerging nature of research culture in higher education as an academic area of study necessitates this operationalisation. To ensure clarity in defining research culture in the present study, each of the terms 'research' and 'culture' is first clarified separately.

1.7.1 The concept of research

Controversies have arisen among higher education institutions, academics, evaluators and funding agencies on how exactly research should be defined and how its output could be measured (Hazelkorn, 2005; Morgan-Jones *et al.,* 2013; Harley *et al.,* 2016; Hladchenko *et al.,* 2016). Research, especially in the university setting, has traditionally been associated with discovery or to put it differently, searching for something new, in which the findings are submitted to a vetting process in journals for publications. Such conceptualisation of research is arguably crude, because it centred on basic research and excludes applied research. A broad definition of research gets rid of necessitating only a 'discovery' aspect (basic research) such that it includes the application aspect (applied research). Thus, research is defined as a systematic and creative process of using and organising existing knowledge that leads to the production of new knowledge and/or generation of new concepts, methodologies and understandings that will provide a solution to or impact a given problem (Hill, 1999; Fenwick, 2012; Puplampu, 2012).

Such a conception of research implies that the product or findings of research in a given field should make a theoretical contribution to the body of knowledge (basic research). Indeed, the product or findings of research should make a practical contribution (applied research) or being useful in developing new or making significant improvements to existing products or services (Australian Research Council, 2010; Bai, 2010; Asikhia, 2013). Research, in this sense, includes undertaking to generate or improve knowledge that will usually meet the research clients' immediate needs; for instance, knowledge for teaching and decision making. Research also includes activity to produce, transfer and

translate knowledge (knowledge valorisation) that will bring about improvement in life; for example, enhancing work efficiency in industries, farms, banks and hospitals, improving better delivery of service and increasing crop production.

Literature frequently distinguishes between research activities and productivities or research inputs and outputs (Bai, 2010). Research activities refer to inputs and processes such as conducting scientific investigations, reviewing research projects, supervision of graduate students, research funding, research-led teaching, referring journal submissions, and collaborating and networking with other researchers locally and internationally. Conversely, research outputs refer to outcomes, products and the impact of research in shaping policy and practice and improving livelihoods. As such, research outputs include research-based publications such as peer-reviewed journal articles and books, research grants, software, patents and the impact of research on society which is, although hard to quantify, measured in terms of increased level of the community's socio-economic development (Bloom *et al.*, 2014; Kruss *et al.*, 2015; Pinheiro & Pillay, 2016; Hermannsson & Lecca, 2016).

As there exists a positive relationship between research activities and research productivities, this study operationalised research as both the research activities and research outputs and the impact the output of research has on the society. Correspondingly, since the meaning of research, as explained in this chapter and subsequent chapters, is closely related to knowledge, i.e., research is a process that use knowledge and it is undertaken to establish new or improve the existing knowledge, the term research in this study is sometimes used interchangeably with the term knowledge (see Chapter 2 for the detailed clarification of knowledge).

1.7.2 The concept of culture

The concept of culture has its roots in the field of anthropology, and it can be traced back to the late 19th century. Anthropologists Kroeber and Kluckhohn in 1952 examined 164 definitions of culture and conclusively established that culture involves the patterns of behaving, feeling and reacting and the unstated habitual ways of thinking, feeling and reacting, that characterise the ways

specific members of the society deal with their problems (Berthon *et al.,* 2001). In brief, culture refers to the values and beliefs shared by members of a society.

Around the 1960s, the concept of culture gained momentum in other disciplines such as business, management and organisational theory. In higher education, the concept has been used to describe, for instance, the effectiveness of higher education institutions (Maassen, 1996). Although it is now widely employed in higher education, the use of the term culture does not go undisputed. This disagreement does not only testify to the merit of culture as a concept but also creates difficulties for both the reader and the scholar when definitions are blurred and inconsistently used (Schein, 2004, 2010). Nonetheless, whichever way the term culture is used, scholars using the concept in higher education want to study the symbolic or non-rational aspects of higher education (Maassen, 1996).

According to Hofstede (2003, p.5), culture is the 'software of the mind' or 'mental programming' of a person. A person's mental programme, as Hofstede states, is embedded within the socio-cultural environment in which one was raised and gathered life experiences. Hofstede acknowledges that culture should be distinguished from human nature because culture is learned or acquired, not inherited. The implication is that culture can be moulded, nurtured or developed. At mental programming level, for example, one can feel fear, anger, or love and can do exercise, play and observe nature; nonetheless, what one can do with the feelings of love or anger, how one can express fear or joy, and how one do observations, play, is modified by culture (Hofstede, 2003).

Schein's (2004) organisational theory-based definition of culture is perhaps the most widely cited in the literature. Schein (2004) defines culture as a pattern of collective basic assumptions learned by a group in the adaptation and integration processes with their external and internal environments. These basic assumptions are considered as the valid to have worked well enough for them to be considered valid and correct way of perceiving, thinking and behaving, and thus to be taught to new members.

The key to Schein's (2004) definition, just as in Hofstede's (2003) case, is the word "learned", which distinguishes culture from biologically inherited

behaviours. Beverland and Bretherton (1997, p.5) supports this view, as they define culture as 'values in action' which all members of a community or organisation embody. Thus, Schein's definition is adopted for the present study.

Since culture is learned, it can shape the behaviour of individuals in an organisation or institution, and hence impact on the individual and the general institutional performance. Organisational culture literature also affirms that culture influences organisational performance (Tsui *et al.*, 2006; Miroshnik, 2013). In any organisation, members learn the values and attitudes (culture) via others' behaviours, verbal and written communication, policy circulars and manuals, rules and regulations, and the management behaviour (Miroshnik, 2013; Hladchenko *et al.*, 2016).

In this regard, the issue of developing research in Tanzanian universities – the focus of this study – needs to be examined under the cultural norms and behavioural patterns of the Tanzanian higher education academics, leaders and policymakers because it has long been identified that culture determines behaviour. The questions revolve around how culture can shape behaviour and how is it that by changing the culture one may change behaviour or by changing behaviour one may change the culture. The foregoing questions have preoccupied the minds of many academics for a number of years (Puplampu, 2012). With a specific focus on the overriding topic of changing a research culture, these questions will be revisited later (see Chapter 3). For now, the focal question is: What is research culture?

1.7.3 The concept of research culture

The concept of research culture has been generally defined in the literature as a system of shared attitudes or shared basic assumptions concerning research. Hazelkorn (2005, p.63) defines research culture as an "intellectual seed-bed required for sustainable and productive research activity." According to Parse (2007), research culture is also "a lived worldview grounded in values and beliefs that surface in a dedication to the pursuit of excellence in discovering and refining knowledge for the betterment of humankind" (p.197). Evans (2007) also defines research culture as "shared values, assumptions, beliefs, rituals and other forms of behaviour whose central focus is the acceptance and recognition

of research practice and output as valued, worthwhile and pre-eminent activity" (p.2). The present study operationalises research culture using Evans' (2007) comprehensive definition, showing that the research culture reflects the attitudes, ideals and beliefs regarding research within the organisation held by both the management and the members.

As the organisation or institution does not exist in a vacuum, there are external factors, especially government policies, which can shape the culture of research within the institution, and which ought to be taken into account. Therefore, it is reasonable to add that research culture constitutes the beliefs, attitudes and ideals about research within the institution held by both the staff and management and as stimulated by the government policies at the national level.

From the description of research culture presented thus far, two important characteristics emerge, namely collegiality and learnability. Firstly, collegiality is vital because research culture at institutions is viewed as a collegial or collaborative activity. Hill (1999) asserts that one of the purposes of developing a research culture in HEIs is creating a situation where research becomes and is viewed as an interconnected group activity. In consequence, collegiality enables members of academic staff to help each other develop ideas, critique each other's work or suggest references that might improve their research according to the discussion held. The research collaboration among colleagues and/or groups indicates a prosperous research culture in an institution unlike individuals conducting research on their own.

Secondly, learnability is part of developing a research culture because research culture is a learned process from experiences and 'significant others' as named by Hill (1999, p.4). These significant others may include friends, colleagues, leaders and research supervisors who are seen as role models. The assumptions and behaviours of research, in the first place, are shared through interaction and socialisation with colleagues, mentors, management and even environment. It follows, then, that these research assumptions and behaviours are accepted and regarded as important for one to practice, which eventually are acquired and become an integral part of academic staff research lives, and hence their culture.

On the whole, developing a research culture as the varied definitions illustrate is not straightforward or formulaic, especially in institutions where research begins to grow (Parse, 2007; Evans, 2007; Ridley, 2011). Hazelkorn (2005) and Hladchenko *et al.* (2016) assert that building a research culture is not a one-off project but rather results from an on-going series of strategic policies and actions aimed at developing, underpinning and bolstering such a culture. Brennan (1995) identified two dimensions as essential in creating a prosperous research culture: institutional activity and national activity. Research as an institutional activity is when one comprehends the fact that research is conducted to preserve the institution's intellectual rigour or to put it differently, 'basic research'.

Equally, research as a national activity is when one understands that research is conducted for the development process, linked with issues of national economic advantage and competitiveness (applied research). Institutions that strive to develop a research culture capable of connecting the two cogs – institutional and national activities – are increasingly operating or aspiring to be at global levels of excellence. The Massachusetts Institute of Technology (MIT) and Stanford University in the United States, Hong Kong University of Science and Technology (HKUST) in Hong Kong and the University of Sao Paulo in Brazil are among the world's top performing research institutions that have succeeded to develop university research as an institutional or academic activity as well as an instrument for innovation and industrial competitiveness.

1.8 Scope of the study

This study sought answers to the following central question: How is Tanzania's higher education sector developing a research culture? The variables investigated were the influence of the higher education policy context on the development of a research culture, approaches used to develop a research culture, challenges faced in developing a research culture and critical factors for building a prosperous research culture. The study was delimited to four universities, both public and private, located in four different regions (provinces) of Tanzania: Dar es Salaam, Morogoro, Arusha and Mwanza. Four sets of criteria were used to select the four universities under review: accreditation status, age of institution, geographical location and nature of ownership. The

study also involved the Ministry of Education and Vocational Training (MoEVT) and Tanzania Commission for Universities (TCU), both of which are located in Dar es Salaam.

The study deployed a qualitative-multiple case study conducted from January 2015 to June 2015. Therefore, the findings and conclusions of the study are delimited to the study area and the specified timeframe. In fact, given the varied character of Tanzanian universities in terms of ownership, geographical location, historical backgrounds and accessibility to human, physical and fiscal resources, any generalisation of the findings beyond the present study's scope should consider the context in which the study was undertaken.

1.9 Context of the study

Developments in education and attendant practices take different forms and structures in different countries around the world. It is thus vital to analyse the context of the present study – the United Republic of Tanzania – in order to familiarise the reader with the country's geographical and political characteristics as well as education developments and practices. This analysis also helps the researcher to determine and illuminate on salient points at both the national and institutional level that warranted the empirical investigation in this study. Towards this end, this section presents general background information about the country in terms of its political roots, composition, economy, population and languages officially used, as well as its education system and structure.

1.9.1 Historical background of the United Republic of Tanzania

The United Republic of Tanzania is a union of two countries: Tanganyika and Zanzibar. Tanganyika got independence on 9th December 1961, from the British colonial rule, and Zanzibar won its on 10th December 1963. On 26th April 1964, the two nations united to form the United Republic of Tanzania (URT). Tanganyika is now called Tanzania Mainland or simply Tanzania, and Zanzibar is simply known as Zanzibar or Tanzania Isles. The United Republic of Tanzania is a developing country that belongs to the group of 48 countries designated as the world's least developed countries (LDCs) by the United Nations in its recent 2014

review (see section 1.1). Tanzania's per capita income represents the lowest figure in the world which was $842 (£636) in 2015, with an annual growth rate of approximately 7% (World Bank, 2016). Agriculture is the backbone of the country's economy. It provides employment to 80% of the total workforce and accounts for 50% of the Gross Domestic Product (GDP). The 2012 population census indicated that the Tanzanian population constituted 45 million people to which 80% were living in rural areas (National Bureau of Statistics, 2012).

Tanzania is made up of 120 ethnic groups. Despite this ethnic diversity, Tanzanians do not experience a language barrier because all the ethnic groups and inhabitants have accepted Kiswahili as their lingua franca. Vernacular languages are confined to families and esoteric social groups, and even then there is a lot of code-switching involving Kiswahili and those other languages. Kiswahili originated from the Bantu language (the dead language of East Africa). Kiswahili also borrowed some of its vocabulary from German, Portuguese, English and Arabic. The use of Kiswahili has been strengthened by the government of Tanzania which, since independence, has incorporated it in the education system as a compulsory subject and a medium of instruction for all primary schools with the exception of a few English-medium primary schools. Kiswahili has also been added to the university syllabus. Moreover, the National Kiswahili Council of Tanzania is indeed working towards internationalising the Kiswahili language.

English dominates all the foreign languages in Tanzania. It is used as the medium of instruction (MOI) in all the country's secondary schools and universities. Arabic, French, Hindu, Greek and Italian are also spoken but only by the ethnicities that speak those languages. French is also taught as a subject in secondary schools and a few primary schools. More recently, Chinese is also increasingly being taught to those willing to learn the language particularly following the introduction of a centre for Chinese language learning by Confucius Institute at the University of Dar es Salaam.

1.9.2 Historical overview of education in Tanzania

Education practice and development in Tanzania dates back to the pre-colonial period. During this pre-colonial period, Tanzania (then Tanganyika) practised a

non-formal education system informed largely by traditional beliefs and values. The non-formal traditional education was influential in shaping and characterising the socio-economic set-up of Tanzanian pre-colonial societies. It promoted philosophies of good citizenship, development of practical life skills and the preservation of respected norms and customs (Anangisye, 2008). Instructors in non-formal education system were village/clan men and women – mainly elders – with expertise in a particular field such as knowledge of plants, weather, animals and soils. The learning process was generally informal, although some aspects of formal learning were present; for example, special traditional experts taught specialised life skills during a specified period of the year and only to a stated group of individuals selected according to their age and sex.

The traditional education was supplanted by a more formal education system introduced by the colonialists with the aim of perpetuating colonial exploitation. Arabs were the first invaders to introduce the initial aspects of formal education in Tanganyika (now Tanzania) following their settlement on the Coast of the Indian Ocean in East Africa and the establishment of Koranic schools that aimed at spreading Islam and Arabic culture (Lawuo, 1978). The fact that Arabs introduced the initial formal education in Tanganyika and Africa, in general, dispels a popular Eurocentric view that the initial formal education in Africa was brought by the Western world. Western civilisation and education were a mere continuation of the formal education steps and initiatives already introduced by the Arabs (Anangisye & Fussy, 2014). Nevertheless, the Western education system whose development is generally due to the missionary efforts and Western colonial authorities, has greatly influenced the current practice of formal education in Tanzania and Africa as a whole.

1.9.3 Basic structure of education in Tanzania

Tanzania divides its formal education system into five structures: pre-primary education, primary education, ordinary level secondary education, advanced level secondary education and tertiary or higher education (see Figure 1.1, p.19). The pre-primary education runs for two years, primary for seven years, ordinary level secondary for four years, advanced level secondary for two years and tertiary or higher education for three years and above. Graphically the

education structure can be presented as 2 – 7 – 4 – 2 – 3+, respectively. The schooling age is from 5-6 for pre-primary, 7-13 for primary, 14-17 for lower secondary, 18-19 for upper secondary and 20-24+ for tertiary and higher education. The structure of education in Tanzania generally takes a pyramidal shape as the number of students attending education decreases with the increase of an education level (see Figure 1.2, p.22).

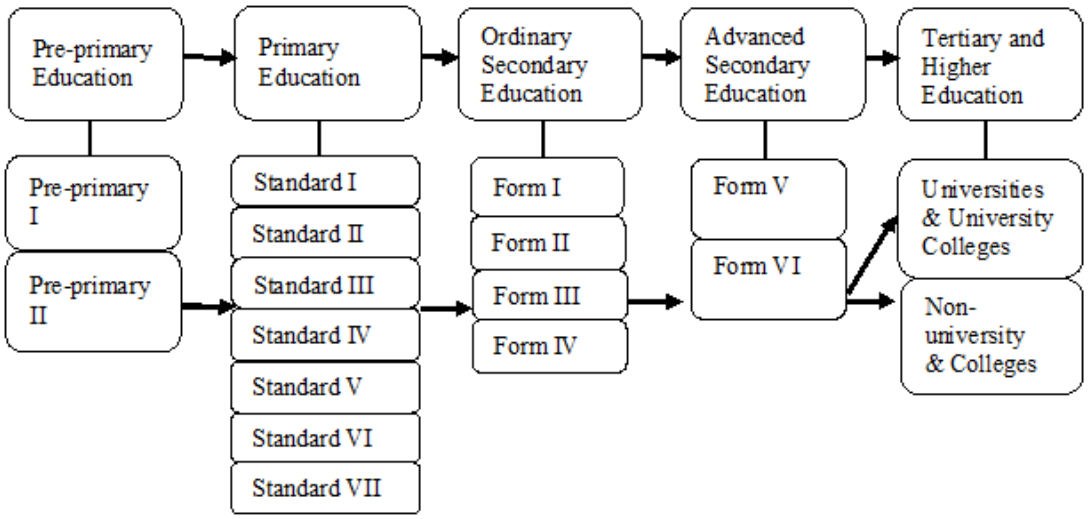

Figure 1-1 The Tanzanian Education System

1.9.3.1 Pre-primary education

This level of education prepares school-aged children of five and six years *en route* to primary level of education. Pre-primary education runs for two years; however, there are no formal examinations upon its completion. The level simply intends to nurture the youngsters' social, physical, psychological, mental, cultural and moral well-being. Kiswahili is used as the official medium of instruction at pre-primary education level; nonetheless, English is used in private pre-primary schools. The pre-primary curriculum package consists of eight subjects: Kiswahili, Mathematics, Arts, Environmental Studies, Religious Education, Games, Sports and Handicraft. The total number of registered pupils in 2014 were 1,026,466 and the number of teacher workforce was 969,683 (URT, 2014a).

1.9.3.2 Primary education

This post pre-primary level of education is compulsory for school-aged children of seven to 13. It starts from Standard I to VII when pupils' readiness and competence to join secondary level are judged by formal examinations – the Primary School Leaving Examination (PSLE). In addition to this PSLE, private secondary schools usually employ aptitude tests to select their entrants. The official medium of instruction at primary education level is Kiswahili; nevertheless, English is used in private primary schools. Generally, three major subjects are officially taught in primary education: Mathematics, General Knowledge and Languages (Kiswahili and English). A total of 16,342 primary schools operate in Tanzania, with the size of 189,487 teacher workforce that serves around 8,231,913 pupils (URT, 2014a).

1.9.3.3 Secondary education

This is the third level of education which uses English as the medium of instruction throughout. Secondary education consists of two sequential cycles: ordinary level secondary education (O-Level) and advanced level secondary education (A-Level). The O-Level consists of Form One up to Form Four, thus making it runs for four years. The A-Level runs for two years, from Form Five to Form Six. The official school attending age is 14-17 years for O-Level and 18-19 years for A-Level. The Primary School Leaving Examination (PSLE) cut-off points mark the entrance to O-Level while A-Level admission is based on pre-set national credits obtained in the Certificate of Secondary Education Examination (CSEE). The secondary school curriculum is made up of Science subjects, Art subjects, Language subjects and Economics subjects. Science subjects include Chemistry, Physics, Biology, Basic Mathematics and Agriculture; Art subjects include Geography, Civics and History; Language subjects include English, Kiswahili and French, and Economics subjects include Commerce and Book-Keeping.

Students are required to study at least seven subjects at the O-Level, five of which are compulsory including Biology, Basic Mathematics, Civics, English and Kiswahili. Equally, three science-based or arts-based subjects are a requirement for the A-Level curriculum package. Secondary education enrolment was

1,804,056 in total by 2014, where 1,728,534 for O-Level and 75,522 for A-Level students (URT, 2014a). The teacher workforce consists of 73,407, serving a total of 4,576 secondary schools.

1.9.3.4 Tertiary and higher education

Tertiary and higher education marks the final level of formal education in Tanzania. Like other levels of education, both public and private sectors are also involved in the provision of this level of education. Tertiary education offers non-degree programmes including vocational training, nursing, journalism and other professional non-degree programmes. As such, tertiary education in Tanzania is divided into three clusters: folk and vocational education, technical education and teacher education. Teacher education consists of 123 colleges and enrols around 35,645 trainee teachers who are served by 2,075 teachers. Folk and vocational education enrols 145,511 students in 759 centres. Technical education enrols 113,080 students who are attended by 1182 trainers (URT, 2014a). Depending on course requirements, tertiary education programmes run for six months to three years that lead to the award of Certificate, Ordinary Diploma and Advanced Diploma. Unlike institutions of higher education institutions, tertiary education institutions are non-autonomous; they are supervised by the National Council for Technical Education (NACTE).

Higher education in Tanzania is made up of universities and university colleges. These institutions award degree programmes that take three or more years to complete. Students with A-Level or equivalent tertiary level qualifications are eligible for higher education admission. Tanzania has established a central admission system (CAS) to ensure quality and fairness in university admission. Around 143,390 students were enrolled in various degree programmes and the academic workforce around 3,655 members were employed by 2014 (URT, 2014a).

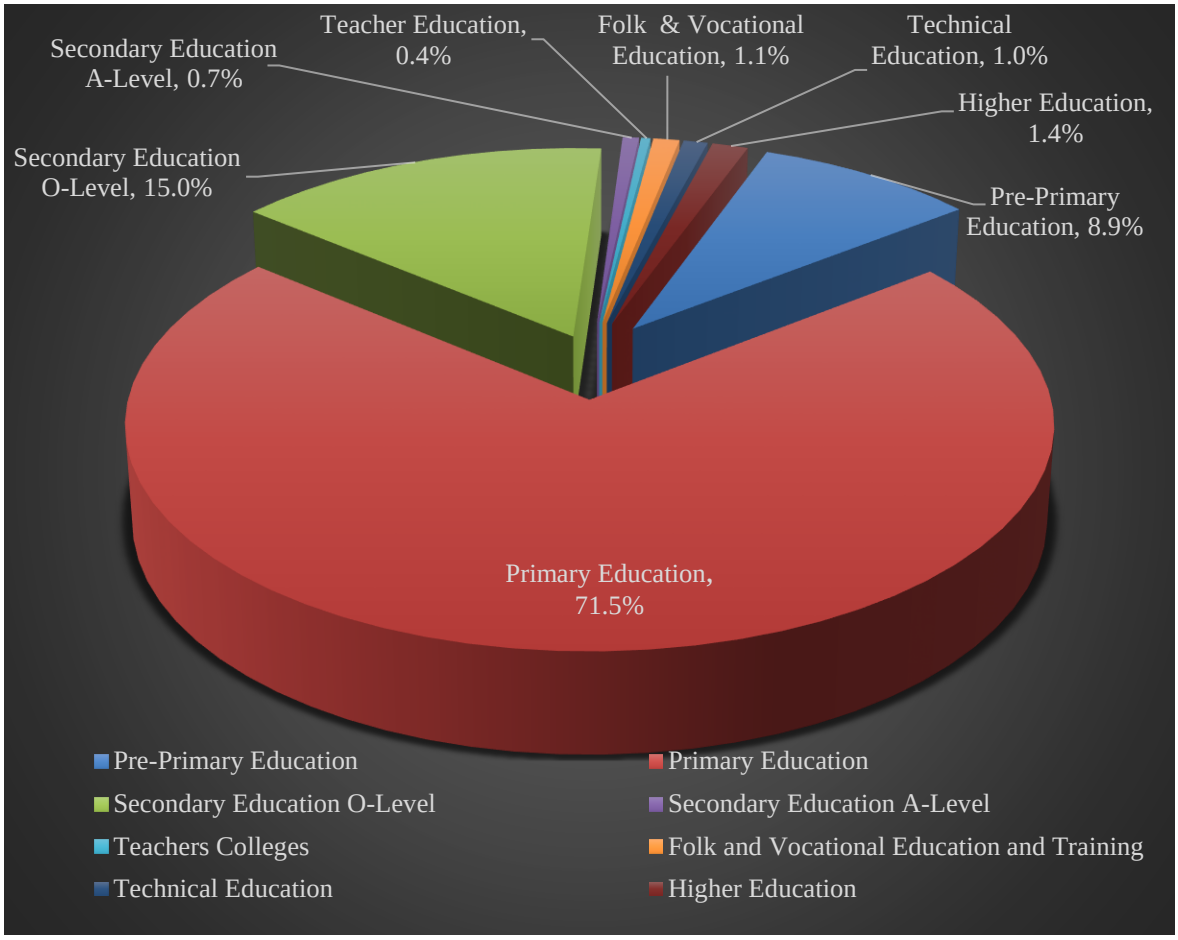

Figure 1-2 Student Enrolment in Different Levels of Education in Tanzania – 2014

Institutions of higher education are autonomous; nonetheless, the Tanzania Commission for Universities (TCU) co-ordinates these institutions to ensure that they comply with the set pre-determined functions and standards. Higher education institutions in Tanzania have grown from one to two institutions – between 1970 and 1990 – and from two to 47 institutions – between 2000 and 2015. This growth, however, has not been reflected in the volume of research output produced. The research output is normally small compared with the existing number of universities in Tanzania (Makulilo, 2012; Bangi & Sahay, 2014; Peter, 2014).

The detailed discussion of research activity and management of higher education in Tanzania is offered in Chapter 5 in order to create a coherent account of basic issues and findings discussed in the chapter. This section primarily emphasises that there is a need for higher education institutions in Tanzania to develop a research culture, which has a long-term facilitative role, in the following four ways.

Firstly, a research culture will foster the production and application of research-based knowledge and professionally trained human resource personnel who can serve in various sectors in the country in order to raise the level of development. Secondly, it will lead to the production of more academics with doctoral degrees to overcome the acute shortage of academic and research staff as detailed in Chapter 5. Thirdly, it will create an enabling environment for attracting more funding to augment the low level of government funding. Fourthly, a culture of research and knowledge production will help advance frontiers of knowledge, which in turn will increase the country's share of world's research output, as well as the local and international reputation and visibility of its universities and academic staff members.

1.10 Structure of the thesis

This thesis is organised into nine chapters as follows:

Chapter 1, which is an introductory chapter, provides a rationale of why the study was conducted. Among other things, the chapter presents the research problem, the research questions, the scope of the study and the study's context. The chapter further highlights the historical background of research as a university activity, followed by an explication of key concepts of the study such as higher education, research, culture and research culture.

Chapter 2 reviews a body of literature on the role of universities in the knowledge-based economy. The chapter describes three major ways: knowledge production, knowledge transmission and knowledge transfer, that universities employ to spearhead the knowledge-based economy (KBE) and society's development as a whole. The chapter also presents challenges African universities face in fulfilling their roles of producing, transmitting and transferring knowledge and eventually contribute effectively to the success of the KBE.

Chapter 3 reviews the literature on research culture in higher education. Six prominent variables pertinent to the present enquiry resulted from the review of past theoretical and empirical studies. These six variables include the importance of research in universities, strategies to develop university research,

debates on the link between research and teaching in higher education, case studies on the development of a research culture, empirical studies on research culture in higher education and the conceptual framework guiding the study. The analysis and critique of the literature was used to inform the study's research questions and design, and it has created the foundation for reference and interpretation of the findings presented in the subsequent chapters.

Chapter 4 describes the study's research design and methodology. The chapter, in particular, presents the philosophy underpinning the research, the research design, methodology and methods applied for data collection, management and analysis. The chapter specifically explains the sampling techniques employed for selecting research sites and participants. Strategies for observing ethical issues and enhancing the trustworthiness of the research is also provided.

Chapter 5, 6, 7 and 8 present, analyse and discuss the findings. These four empirical chapters are organised in accordance with the four research questions that guided the study. Specifically, Chapter 5 focuses on the influence of Tanzanian higher education policy context on the development of a research culture. Chapter 6 focuses on the role of Tanzanian higher education institutions in developing a research culture. Chapter 7 addresses the challenges of developing a research culture in Tanzanian higher education institutions. Based on the higher educational stakeholders, who participated in the study, Chapter 8 presents the essential factors for building a prosperous research culture, the aim of which is to establish a set of guidelines for devising effective policies and practices, that Tanzania and other countries with similar demographic, social, cultural and economic characteristics can deploy to promote a research culture in their respective universities. The presentation of the findings from the empirical research in each chapter is immediately followed by the analysis and discussion.

Finally, Chapter 9 provides a summary and includes the conclusions and recommendations of the study. The chapter summarises the main findings of the study, followed by the study's contributions and inferences relating them to the general research objective and questions. The chapter further highlights the possible limitations of the study and provides recommendations for policy and praxis as well as for further research.

2 Universities and the Knowledge-Based Economy

2.1 Introduction

This study focuses on the development of a research culture in Tanzanian universities. The underlying logic for developing a research culture in universities is that research produces knowledge, and this knowledge is crucial for the growth and development of universities, as well as for nations – particularly in the present competitive knowledge-based economies. In this regard, there is a need to define and clearly explain the meaning of knowledge and knowledge-based economies (KBE), the kind of knowledge that the present study is referring to and the role that universities can play in the realisation of knowledge-based economies. In light of this, the current chapter reviews literature regarding the role of universities in the KBE.

The chapter specifically describes the core concepts of knowledge and knowledge-based economy, analysing three major approaches stemming from research-based activities: knowledge production, knowledge transmission and knowledge transfer – that universities can contribute to the success of the KBE and society's development in general. The chapter also identifies the place of African universities in fulfilling the fundamental roles of producing, transmitting and transferring knowledge and eventually making a significant contribution to the KBE.

The chapter is divided into five sections. Following this opening section, section 2.2 describes the core concepts of knowledge and knowledge-based economy. Section 2.3 presents the role of universities in the KBE. Section 2.4 explains the historical and contemporary challenges higher education in Africa faces in fulfilling the role of universities as presented in section 2.3. Finally, section 2.5 summarises and concludes the chapter. Generally, the chapter argues that universities across the world remain critical in knowledge production, dissemination and transfer, and in bolstering the success of the KBE. Indeed, any initiatives that are established to develop Africa's research infrastructure and culture should place the present situation in its wider socio-historical context

wherein Africa's higher education in general and particularly research, has been hindered for decades by challenges as discussed in this chapter.

2.2 The concept of knowledge-based economy (KBE)

2.2.1 Knowledge: An overview

There is no single definition of the term "knowledge" on which scholars agree, although the term is widely used. Even though the dictionary defines knowledge as information, understanding and skills acquired through experience or education (Hornby, 2011), there is still an absence of consensus regarding the definition of knowledge in literature. Thus, in the present study, there is a need to conceptualise knowledge as it is generally understood particularly with regard to the KBE. Knowledge under the KBE is defined as "reasoning about information and data to actively enable performance, problem-solving, decision-making, learning and teaching" (Beckman, 1997, p.23). This implies that the conception of knowledge in relation to the KBE is often linked to professional intellect.

Critics have established a set boundary between knowledge and information. For example, Wiig (2004) contends that information *per se* is not knowledge. Information differs fundamentally from knowledge in terms of the purpose and power of each of them in facilitating communication and the understanding of ideas. The purpose of information is a description of ideas while that of knowledge is action from those ideas. These actions are, nonetheless, instigated by knowledgeable people, who make choices and decisions and act upon the choices made (Wiig, 2004). Similarly, what distinguishes information from knowledge is the manner in which they can empower actors with the intellectual capacity or capacity for physical activity. Knowledge entails cognitive capability; information, by distinction, is passive to those lacking suitable knowledge (Brinkley, 2008). For example, if one is presented with some information and does not possess any knowledge, then one cannot take advantage of that information. In other words, knowledge is almost always required for understanding, interpreting and bringing information to life.

Frequently, literature contends that knowledge, as opposed to physical resources, does not depreciate in value when used repeatedly or by an enormous

number of users (Brinkley, 2008). This has been presented as a key economic property of knowledge. As knowledge is cumulative, the ability to comprehend and make sense of certain bits of knowledge may hinge primarily on prior experience or learning. The implication is that the more one knows about a certain discipline, the better one becomes in evaluating and using new data about it (Burton-Jones, 1999). As such, knowledge, as opposed to information, can be used to produce more knowledge in the form of scientific discoveries or new insights. Thus, the more the university research community – staff and students – undertake research, the more they generate new knowledge and new ideas for scientific discoveries and innovation.

2.2.2 General types of knowledge

In general, there are two types of knowledge, namely tacit knowledge and explicit knowledge. Tacit knowledge can best be explained as knowing something much more intrinsically than being able to explain it explicitly (Brinkley, 2008; Karnani, 2013; Fullwood *et al.*, 2013). Simply put, tacit knowledge refers to the knowledge in the form of experience and expertise that is within people's heads, which often cannot be easily expressed, shared, written down and organised in any information format or databases. Intuitions, hunches and subjective insights, for example, belong to tacit knowledge. Given the fact that tacit knowledge is deeply entrenched in a person's experience and actions and in the values, emotions or ideals one embraces it tends to be difficult and costly to transfer or transmit to others. As a result, tacit knowledge is usually called hidden knowledge or theoretical knowledge or non-coded knowledge. Although tacit knowledge is difficult to store or articulate and it is dubbed as hidden knowledge, it shapes the way human beings perceive the world (Nonaka & Konno, 1998; Karnani, 2013).

Tacit knowledge has been transmitted on from one person to another – mentor to protégé – through behavioural observation, knowledge elicitation and participation in shared activities (Nonaka & Konno, 1998; Eraut, 2007; Daniels, 2009; Fullwood *et al.*, 2013). Students or apprentices listen and observe mentors and others at home or at work and participate in joint activities. In consequence, they acquire new perspectives and practices and gain a sense of another's tacit knowledge (Eraut, 2007). At higher education institutions (HEIs),

the supervision of research students and mentoring programmes are central to sharing tacit knowledge. This is due to the fact that the mentoring and/or supervision of research are often conducted through joint events and practices such as working in the same environment, spending time together, observing, listening and imitating from the supervisor or mentor (Nonaka & Konno, 1998; Winch, 2010).

Explicit knowledge, on the other hand, refers to the knowledge which can easily be codified, shared and expressed in words and in publication, such as reports, user manuals, formulae and instructions (Brinkley, 2008; Karnani, 2013; Fullwood *et al.*, 2013). Explicit knowledge is often called scientific knowledge, coded knowledge or recognised knowledge. Research-based publications and scientific discoveries are typical examples of explicit knowledge.

Explicit knowledge is usually stored in databases or knowledge management systems and can simply be consulted, shared and used when needed by any person in the organisation or society. Explicit knowledge at higher education institutions (HEIs) is made available through publications, conference presentations, teaching and community outreach services. In this respect, HEIs are urged to develop a research culture that ultimately will translate into publications, scientific discoveries and the production of skilled personnel through teaching and community engagement.

Despite the stated differences, tacit and explicit forms of knowledge should not be seen as separate entities since they are directly related. Nevertheless, tacit knowledge possesses greater value and it plays a more critical role in the creation of knowledge and innovation process (Karnani, 2013), particularly in terms of 'creativity' (Winch, 2010, p.117). Tacit knowledge is, indeed, indispensable to the development of expertise and is frequently regarded to be one of the principal attributes of experts or specialists (Winch, 2010).

2.2.3 Describing the knowledge-based economy (KBE)

It is the OECD's (1996) document entitled *The Knowledge-Based Economy* that spread and popularised the concept of KBE in political and scientific literature. The idea behind KBE is that knowledge is recognised as one of the prime

resources for stimulating socio-economic development. According to the OECD (1996) and the World Bank (2011), a knowledge-based economy is one in which people and organisations create, acquire, disseminate and use knowledge more efficiently and effectively for greater socio-economic growth. In OECD countries, for example, 50% and above of the GDP is estimated to be derived from knowledge-intensive activities such as education and information and communications technology – ICT (Campbell & Carayannis, 2013). Therefore, the move towards the KBE is prudent and cannot be neglected in the economic growth strategies of countries in sub-Saharan Africa and elsewhere.

The recognition of knowledge as the prime resource in fostering socio-economic growth has led to the increased status of education generally and higher education more specifically (Bloom *et al.*, 2014; Pinheiro & Pillay, 2016; Hladchenko *et al.*, 2016). Even powerful international donor institutions, such as the World Bank, which previously refrained from supporting higher education in developing countries because it was not considered to be a defensible investment, have now acknowledged that higher education institutions, particularly research-intensive ones, are imperative to national development (Bloom *et al.*, 2014; MacGregor, 2015; Hladchenko *et al.*, 2016).

Moreover, recent studies in South Africa, Malawi and the United Kingdom demonstrate that higher education is significant in improving the national economy, as a graduate workforce and scientific knowledge produced through research raises productivity levels and contributes to economic growth (Kelly *et al.*, 2014; Hermannsson *et al.*, 2015; Kruss *et al.*, 2015; Hermannsson & Lecca, 2016). The implication is that higher education institutions are central to the national resources' development and ultimately for the success of the knowledge-based economies. As such, the following section (2.2.4) describes different typologies of knowledge under the KBE and section 2.3 discusses how higher education can facilitate the success of the knowledge-based economy.

2.2.4 Knowledge typologies under the KBE

Before detailing on how HEIs can facilitate the success of the KBE, it is essential to first distinguish and describe the different typologies of knowledge, and how these knowledge typologies can make a significant contribution to economic

activity. According to the OECD (1996) report, *The Knowledge Based Economy*, knowledge is divided into four areas: know-what, know-why, know-how and know-who.

2.2.4.1 Know-what knowledge

Know-what knowledge refers to the knowledge of facts; for example, Tanganyika (now Tanzania) got independence in 1961 and the Normans invaded the British Isles in 1066. The knowledge of the rules and laws of accounting, and that of grammar and vocabulary in a given language also belong to this category of know-what knowledge. Know-what knowledge is also considered to be the most basic stage of knowledge – equivalent to information – that one needs in order to make a decision. The know-what knowledge is generally explicit and can easily be codified and shared. Experts in any profession must possess this type of knowledge for them to fulfil their jobs effectively (OECD, 1996; Mindeli & Pipiya, 2007; Daniels, 2009). Much of this knowledge is provided in undergraduate programmes at HEIs and through reading and listening to various sources of information.

2.2.4.2 Know-why knowledge

Know-why knowledge can be understood as the big-picture view of something, or the why behind the what. This type of knowledge goes beyond the basic statement of a fact and establishes the reason for or the why of the stated fact. In so doing, know-why knowledge enables individuals to deal with unseen circumstances and unfamiliar interactions (Mindeli & Pipiya, 2007; Daniels, 2009). This type of knowledge, though, often belongs to the realm of information since it can be coded and shared. Scientific methods and procedures were established to guide the production or discovery of this type of knowledge. The production of know-why knowledge is frequently organised and conducted within specialised institutions, such as universities and research institutions. This implies that knowledge of how to produce the know-why knowledge and people (scientifically-trained personnel) who could participate in the production of this know-why should always be available (OECD, 1996; Mindeli & Pipiya, 2007; Cloete *et al.*, 2015). Therefore, universities are doubly crucial in the production

and reproduction of know-why knowledge; thus, they must produce professionally-trained human resource and expertise.

2.2.4.3 Know-how knowledge

Know-how knowledge represents the ability to use the information one has to create or come up with something, such as the ability to translate learned knowledge or transform information into tangible real-life results. This type of knowledge differs considerably from information and often falls within the realm of tacit knowledge (Daniels, 2009; Winch, 2010). Universities can deliver and facilitate the sharing of know-how knowledge through the formation of students' discussions, research groups or teams and university networks. Know-how knowledge can also be delivered at universities by utilising active forms of learning that merge theory and practice. One form of active learning is enquiry-based learning (EBL). EBL actively engages both teachers and students in the learning experience, encouraging them to search for new knowledge and to develop critical thinking, independence of thought, entrepreneurial skills and the ability to deal with uncertainties (Brew, 2003; Justice *et al.*, 2007; Healey *et al.*, 2010), which is a basic feature of know-how knowledge.

2.2.4.4 Know-who knowledge

Know-who knowledge refers to knowledge of relationships, networks and contacts with individuals who possess know-what and know-how knowledge. To get access to this kind of knowledge or experts of know-who knowledge in an organisation, it requires the formation of certain social interactions and relationships (OECD, 1996). Universities can successfully tap into this type of knowledge through encouraging and supporting internal and external networks and communities of practice such as research teams, mentoring programmes and university-industry or community partnerships – community engagement. Know-who knowledge facilitates creativity and innovation as it fosters collaboration and networking of people with diverse knowledge, skills and experiences.

By and large, there are four types of knowledge under the KBE, and different approaches and channels are used for mastering these four different types of knowledge. Whereas know-what and know-why can be learned through reading

journals and books, accessing databases and attending lectures, the other two (know-how and know-who) are rooted principally in practical experience (Winch, 2010), as they are a product of social and professional interactions among researchers, scientists, organisations and knowledge users. In light of this, section 2.3 discusses how higher education institutions can produce and use these four types of knowledge in order to facilitate the success of the knowledge-based economy.

2.3 The role of universities in the knowledge-based economy

The stride towards the knowledge-based economy begins with the recognition and development of human capital, as a skilled and educated population can generate, share and exploit knowledge in order to innovate and produce economic value. The OECD's (2008) study of higher education policy across 24 countries found that higher education contributes to national socio-economic development in four major ways: human capital development; knowledge creation; knowledge dissemination and application; and storage of knowledge in repositories. This suggests that the higher education sector as a whole, and universities in particular, are crucial for the advancement of the KBE.

The discussion that follows indicates how universities can contribute significantly to the success of the KBE. The discussion is divided into three primary parts: (i) knowledge production – developing knowledge; (ii) knowledge transmission – educating human resources; and (iii) knowledge transfer – disseminating knowledge and inputs to potential users in order to facilitate development processes in the community – knowledge valorisation.

2.3.1 Knowledge production

Since the introduction of the Humboldtian research university model, universities have been considered to be primary producers of new knowledge. Although other research institutions that engage in research-based knowledge production exist outside of the university domain, universities in the present KBE will continue advancing the treasure and importance of knowledge (Cloete *et al.*, 2015; Kruss *et al.*, 2015; Hermannsson *et al.*, 2015). The impact of

university research is powerful and permeates various sectors, and is essential for economic competitiveness and the sustainable development of a nation (Nowotny *et al.,* 2011; Russell Group, 2012; Bloom *et al.,* 2014; Kruss *et al.,* 2015; Aebischer, 2015). Even research undertaken outside of the university setting depends on the skilled personnel trained at universities. This suggests that a prosperous higher education sector is profoundly significant for serving the university system and independent research institutions outside of the university setting.

2.3.2 Knowledge transmission

Universities in the KBE continue with their conventional role of transmitting knowledge, by developing and educating human resources through teaching and community engagement activities. Correspondingly, they need to provide a high level of skills and promote lifelong learning that emphasises creativity, innovation and flexibility to engender continual adaptation to the KBE demands (OECD, 1996; Bloom *et al.,* 2014; Cloete *et al.,* 2015). Characteristics of the world's best performing and successful higher education systems in Finland, South Korea and North Carolina of the United States were investigated in Pillay's (2010) and Pinheiro and Pillay's (2016) studies. They found that the higher education systems in Finland, South Korea and North Carolina have effectively managed to integrate their higher education institutions with their national development strategies. Notwithstanding their contextual differences, the three systems demonstrated the following common characteristics:

- Their higher education systems had been built on a foundation of equitable and quality of schooling with an emphasis on achieving high quality higher education.

- They had achieved higher participation rates in higher education.

- Their higher education systems were differentiated (universities/colleges and public/private) as part of achieving their human capital, research and innovation objectives for economic development.

- Their governments ensured a close link between economic and higher education planning.

- There were effective partnerships and networks between the state, higher education institutions and the private sector to ensure effective education and training, and to stimulate appropriate research and innovation.

- There was also strong state involvement in, for example, providing adequate state funding for higher education; using funding to steer the higher education sector to respond to labour market requirements; and incentivising research and innovation in the higher education sector (Pillay, 2010, p.25).

One crucial lesson underpinning the three systems of Finland, South Korea and North Carolina State, is that a successful higher education sector plays an important role in producing skilled human resources, knowledge and expertise necessary for harnessing national resources and promoting economic development. Consequently, they underline the importance of schooling and the need to reform the higher education system to facilitate the integration of research and training through research-led teaching and learning in undergraduate and postgraduate programmes. Graduates from research-led undergraduate and postgraduate programmes could be imbued with graduate attributes and competencies – capable of serving as university lecturers and researchers as well as members of staff at independent research institutions and firms outside of the university.

2.3.3 Knowledge transfer

After a university generates new knowledge or invents new technology, the institution has a professional duty to transfer it to the wider community and put it to good use. Knowledge transfer refers to the dissemination and sharing of useful ideas, research findings, skills and experiences among universities, R&D institutions, industries, charities, non-governmental organisations and the wider community, to promote the exploitation of the scientific knowledge for the development of new policies, products and services, and eventually improve the standard of living (BIS, 2014; ESRC, 2014; Olmos-Pe˜nuela *et al.*, 2014).

There are several avenues of knowledge transfer available to universities. These avenues include periodical scientific publications such as research reports, journal articles, books, book chapters, monographs, dissertations, theses and working papers. Universities can also disseminate knowledge through

conferences, blogs, newsletters, press releases, open access repositories, consultancies, short courses, community engagement and commercialisation. Knowledge transferred through short courses and community engagement tend to be short and tailored to the needs of the intended audiences; for example, the agricultural community, policy makers, business persons or other professional groups (Lavis *et al.,* 2003; Olmos-Pe˜nuela *et al.,* 2014). Likewise, commercialisation as a knowledge transfer activity involves the selling of the research output (e.g., software, expertise) produced by the university, thus generating income and improving the socio-economic status of the institution and the nation as a whole.

Methods of knowledge transfer can be active (participatory) or passive (non-participatory). The more targeted and active the knowledge transfer method, the more likely it is to result in practical application and bring about the desired outcomes (Lavis *et al.,* 2003; Olmos-Pe˜nuela *et al.,* 2014). Lomas (1993) has classified three types of knowledge transfer methods that researchers or universities may use: diffusion, dissemination and implementation. Diffusion is categorised as passive because it is simply aimed at getting the knowledge or information out there. Most knowledge disseminated through journals, blogs and newsletters as well as student dissertations and theses submitted to their respective institutions falls under this category.

Furthermore, dissemination involves sharing knowledge with the target audiences, and this is achieved, for example, through conferences and workshops. Finally, implementation involves both knowledge dissemination and putting this knowledge to use through community engagement. Universities need to combine all the three types of knowledge transfer methods as specified by Lomas (1993) to meaningfully participate in the knowledge-based economy (KBE).

In summary, the foregoing analysis shows that universities remain critical in engendering the success of the KBE, particularly in three significant inter-related ways: knowledge production, knowledge transmission and knowledge transfer. All of the three ways are explicitly related to knowledge; indeed, knowledge should be present to facilitate their performance. Notwithstanding their interactive nature and character, knowledge production is arguably central

to facilitating the implementation of the rest: knowledge transmission and knowledge transfer, through its role of generating knowledge.

The centrality of knowledge production, as highlighted in the foregoing discussion, explains why the present study largely focuses on the research role or knowledge creation function of the university. The current study specifically focuses on Tanzania (Africa) – the region that tails the world in knowledge production (see Chapter 1) – in order to examine issues at stake and recommend a potential course of action that may improve research productivity in the region. Needless to say, the current state of knowledge production in Africa may not only hinder the implementation of core functions of its universities, but also affect full participation in the KBE and the eventual attainment of sustainable economic growth.

While considering how African universities can effectively fulfil the roles of knowledge production, transmission and transfer, it is necessary for this chapter to discuss the historical challenges that have been hindering African universities in developing a prosperous higher education system in general, and research/knowledge production system in particular. The following section (2.4) presents such a discussion. The discussion in section 2.4 advances the argument that it is imperative to learn from experience and let this experience guide Africa's future decisions and actions. It is also important to acknowledge the fact that the challenges as discussed in the following section (2.4), should be keenly observed when an African country, such as Tanzania, engage in developing a research culture within its higher education system.

2.4 Challenges African universities face regarding knowledge production

Universities in Africa play a central role in the production, dissemination and transfer of knowledge, as the trend for private research institutions to supplement the universities' triple roles as in developed countries, has just begun to emerge in Africa (Atuahene, 2011; Cloete *et al.*, 2015), and even then on a rather limited scale. This implies that a strong higher education system in Africa is a prerequisite for Africa's development and accelerating catch-up with the world's leading economies. This section discusses the challenges, largely

historically-based, which African universities face in engaging in knowledge production roles. The challenges discussed include colonial educational policies; international donor policies; the African political landscape; academic freedom and autonomy; brain-drain; and language used for academic and research. Arguably, any empirical study, such as the present one that seeks to address the status and initiatives of African universities in enhancing research and knowledge production, ought to be prefaced by a discussion of some historical and current factors that describe the continent, and let it guide future direction and actions (Assié-Lumumba, 2006; Atuahene, 2011; Kayira, 2015).

2.4.1 Colonial educational policies

The restrictive nature of colonial educational policies towards the development of higher education in Africa inevitably hindered the development of research in African universities. Over time, colonial powers restrained Africans from attaining higher education in earnest, because they were frightened of fomenting resistance to colonial rule by educated Africans (Zeleza, 2009; Kizza, 2011). The colonial powers educated only a select few to assist in colonial administration much in line with, for example, the British Divide-and-Rule Policy tailored by Lord Lugard in Africa as "indirect rule", whereas others such as the Belgians completely outlawed university education in their African colonies (Teferra & Altbach, 2004; Ekundayo & Ekundayo, 2009).

In consequence, the size of the higher education system in Africa was so negligible that at the time of political independence from colonial powers (mainly in the 1960s), the University of East Africa – serving Kenya, Tanzania and Uganda had graduated only 99 students in 1961. More broadly, Francophone and Anglophone Africa, comprising the bulk of sub-Saharan Africa, produced only 154 graduates in 1963 (Teferra & Altbach, 2004; Assié-Lumumba, 2006; Zeleza, 2009). Indeed, many African countries, such as the Central African Republic (CAR) and Chad, attained their respective political independence without even a single local university.

The failure to develop the higher education sector by the colonial powers constitutes one of the sources of the developmental malaise currently besetting Africa. Many African countries at the time of independence lacked the educated

corps to serve as public administrators and run universities. As a result, the senior ranks of African universities were then staffed largely by expatriates who perpetuated the academic models of the former colonial powers (Assié-Lumumba, 2006; Ekundayo & Ekundayo, 2009; Atuahene, 2011). Furthermore, as the newly independent African states lacked educated personnel in many high priority development areas, African national HEIs were tasked with training civil servants. The training of civil servants by African national HEIs focused predominantly on teaching, something that laid a poor foundation for future research endeavours (Assié-Lumumba, 2006; Atuahene, 2011; Cloete *et al.*, 2015).

African universities so far have made less progress in disengaging themselves from their European colonial foundations as the type of higher education system that exists in Africa still depends on or follows the Western-oriented education system, such as the use of Western languages as mediums of instruction. By and large, African universities are primarily consumers and users of scientific knowledge produced elsewhere, particularly in developed economies (Trotter *et al.*, 2014; Cloete *et al.*, 2015). The longer the retention of Western higher education traditions, the more socially and culturally dependent on the Western-derived higher education system they will become, with the resultant education having little relevance to the local context and context-specific research problems (Assié-Lumumba, 2006; Teferra, 2016). To assume the post-colonial university role and relevance, Africa's higher education must address issues regarding how to detach practically from the socio-historical ties with European society and construct their own socio-cultural structures (Assié-Lumumba, 2006; Teferra, 2016). One way of achieving this objective is to engage in the intensive production of indigenous knowledge and skilled personnel to sustain Africa and reduce over-dependence on overseas personnel.

2.4.2 International donor policies

Africa's socio-economic development has been and continues to be shaped by a number of supranational organisations such as the Organisation for Economic Co-operation and Development (OECD), the International Monetary Fund (IMF) and the World Bank. These supranational organisations support development processes worldwide, through the provision of loans and research-informed

policies and practices to improve the countries' socio-economic wellbeing. Based on their financial and intellectual influence, these supranational organisations often require countries to adopt policies which are considered as "best practices" and have worked well in some contexts/countries, without taking cognisant of the social and economic variations present specifically in the recipient nations. In consequence, many developing countries have found themselves failing to put a meaningful dent in poverty after adopting incompatible policies and practices in their contexts. This subsection discusses the influence of the World Bank in particular, in compelling African countries to accept alien policies, and how this has affected research and higher education development in Africa.

The World Bank has been chosen specifically because it is a leading source of funds for higher education in developing countries and a champion in Africa. The World Bank has been the largest external funding institution for Africa's higher education sector: since 2000, for instance, the World Bank has invested more than one billion US dollars (US$1 billion) in African higher education (MacGregor, 2015). It is vital to preface the World Bank with a brief introduction to set the context for the insightful discussion that follows. The World Bank was founded after the Second World War to support the reconstruction of Europe that had been ravaged by war. By the 1960s, the World Bank had shifted its concentration to the former European colonies with a mission to support developmental activities. In the beginning, the World Bank was reluctant to provide funding for education until after its formal adoption of the human capital theory (HCT) at a later stage (Samoff & Carrol, 2003). The HCT embraces the belief that education is a defensible investment, which, if properly managed, could lead to economic growth and productivity.

In their formative years – soon after achieving their political independence – African countries were preoccupied with the battle against three enemies: disease, illiteracy and poverty. This preoccupation was geared towards reforming people's lives negatively affected by colonial powers. In this fight, education – particularly higher education – became a strategic priority for the majority of the African states. Some African nationalist leaders such as Félix Houphouet-Boigny (Ivory Coast), Kwame Nkrumah (Ghana), Jomo Kenyatta

(Kenya), Julius Nyerere (Tanzania) and Kenneth Kaunda (Zambia) strongly believed that their newly independent nations demanded a well-educated and knowledgeable populace in order to gain their position in the international arena. This ideology prompted many African states during the 1960s and 1970s to invest heavily in their national universities, which resulted in an upsurge in student enrolments.

The enthusiasm for developing the higher education sector by African governments during their formative years was, however, short-lived following a disruption brought about by the falling of commodity prices, the crude oil price hike, trade barriers, declining GDPs, drought, political crises and reduced external funding (Samoff & Carrol, 2004; Atuahene, 2011). This resulted in serious funding crises for most of Africa's nascent universities. In consequence, there was a rapid deterioration of physical facilities, coupled with an erosion of the quality of education on offer. The seemingly intractable financial problems forced African governments to seek the World Bank (WB) assistance. The harsh economic realities of the time prompted some African leaders such as Nyerere of Tanzania, who were fiercely opposed to financial aid from the Breton Woods institutions, because such assistance challenged their socialist convictions to jump onto the bandwagon of seeking the World Bank intervention. However, the World Bank's acceptance in supporting African governments was not free of certain conditions. The infamous World Bank conditions were developed as a universal dose for all ailing developing countries, particularly in Africa.

The World Bank pushed for the mandatory Structural Adjustment Programmes (SAPs). It demanded, as a pre-condition for its loans, that African countries undertake SAPs, which uniformly prescribed economic liberalisation, particularly the privatisation of state-owned enterprises, significant reduction of government expenditure on social services, removal of subsidies and currency devaluation. Many African governments fiercely resisted the World Bank's conditions but to no avail; in the end, they had to accept it (Samoff & Carrol 2003, 2004; Atuahene, 2011). The economic doldrums made the crisis-riddled African nation-states swallow, first, the austerity measures towards economic recovery and, second, towards political pluralism.

In the education sector, the World Bank ordered African governments to cut expenditure from higher education in order to bolster secondary and basic education instead. The World Bank believed that primary and secondary levels of schooling were more significant than higher education in fighting abject poverty (Bloom *et al.,* 2014; Kruss *et al.,* 2015). This belief stemmed from two considerations: firstly, investment returns in lower levels of education such as primary and secondary were deemed to be higher than those for higher education and, secondly, emphasising basic education entails promoting equity in accessing education (Bloom *et al.,* 2006, 2014).

From the World Bank's point of view, there had been an over-investment of resources in higher education in Africa, when much of the benefit of higher education accrued for individuals rather than the whole society. In the face of economic deterioration, the World Bank told Africa that the maximum level of education that the bulk of its populace needed was basic education: "How can you think about higher education when you cannot afford to provide basic education for many of your people?" (Banya & Elu, 2001, p.28). At a 1986 meeting with senior African university leaders held in Harare, Zimbabwe, the World Bank dismissed higher education in Africa as a luxury, imploring African countries to close down their universities and train their people overseas (Brock-Utne, 2003).

Directing more resources towards basic education at the expense of higher education, as demanded by the World Bank, was a tragedy for African universities. The university sector in Africa ended up being marginalised, neglected, under-resourced and under-funded by both African governments and their development partners as a result (Sawyerr, 2004; MacGregor, 2015). The Rockefeller Foundation, for example, which was a long-term supporter of higher education development in Asian, Latin American and African countries, followed the World Bank's policy by phasing out its support for university development in these developing countries. In consequence, African universities experienced two decades of stagnation. They experienced the drying up of research funding, crumbling of physical and learning facilities, reduction in scholarships for further education or attending international conferences. Moreover, the cessation of hiring new personnel and the brain-drain became the order of the day as bright

but frustrated African minds left the continent for greener pastures elsewhere (Brock-Utne, 2003; MacGregor, 2015).

In general, this World Bank policy debilitated the higher education sector in Africa in two major ways. Firstly, the higher education sector was no longer seen as the panacea to the development problem besetting Africa, but as the core of the problem (Brock-Utne 2003; Bloom *et al.,* 2014; MacGregor, 2015). In this regard, the World Bank policy overlooked the key broader point that all levels – primary, secondary or higher education – are interdependent. The World Bank policy overlooked the inevitability of a well-functioning higher education system for the achievement of success in the lower levels, and for nurturing a pool of expertise, and building of indigenous capacity for research to solve the local context-specific problems of poverty (Bloom *et al.,* 2014; Hermannsson & Lecca, 2016). The World Bank policy was also narrow in scope as it failed to consider higher education as a place for producing knowledge, transmitting values and culture and building capacity for industry and business that these developing nations needed to expedite their development process. The World Bank, in particular, short-changed the African nation-states in desperate need of its assistance.

Secondly, the World Bank's strong advocacy for the privatisation of higher education has motivated African governments and other world's governments to shift their responsibility for funding higher education from the public basket to students and families (Samoff & Carrol, 2003; Ishengoma, 2007; Peter, 2014). This over-reliance on student fees has resulted in increasing inequality, as it privileges students from affluent backgrounds in securing admission and completing higher education at the expense of the low-income majority. Inevitably, education has been transformed into a commodity, which privileges those with disposable earnings (Brock-Utne, 2003; Samoff & Carrol, 2003; Ishengoma, 2007; Teferra, 2016), which in turn lowers the higher education participation rates in Africa where the bulk of the population live in poverty.

After two decades of downplaying the importance of higher education, the World Bank has realigned its position (since 2000), and now acknowledges the importance of higher education within the educational sector and national development as a whole. One major reason may have prompted a shift in the

World Bank's perspective. The year 2000 was the beginning of the 21st century, where globalisation and the knowledge-based economy philosophies were peaking. Two seminal reports: the OECD's (1996) *The Knowledge-Based Economy* and the World Bank's (1999) *World Development Report: Knowledge for Development*, promoted the knowledge-based economy philosophies by stressing that knowledge is a key resource for stimulating nations' socio-economic development, and that the developing world could use knowledge to catch-up with developed countries. These two seminal reports placed trust in higher education, arguing that higher education is central to developing countries' prosperity in a global economy wherein knowledge has become a decisive factor and a critical area of advantage in production processes.

Towards the realignment of its perspective on higher education, the World Bank and UNESCO organised a Task Force in 1998, to examine the future prospects of higher education in developing countries. The Task Force published an influential report in March 2000: *Higher Education in Developing Countries: Peril and Promise*. The Task Force's report declared: "Higher education is no longer a luxury: it is essential to national social and economic development" (World Bank, 2000, p.14). In 2002, the World Bank published another report: *Constructing Knowledge Societies: New Challenges for Tertiary Education*. The report also underscored the significance of higher education as "more influential than ever in the construction of knowledge economies and democratic societies" (World Bank, 2002, p.1).

The momentum towards fostering Africa's higher education was further engendered by the 2006 World Bank-sponsored study, entitled *Higher Education and Economic Development in Africa* (Bloom *et al.*, 2006). This work urges countries not only to pay attention to the rate of return analyses but also to focus on the spill-over benefits resulting from higher education, which were ignored by the previous minded studies. Bloom *et al*. (2006) testify that both public and private benefits accrue from higher education. Universities produce skilled and innovative workers who, in turn, can increase productivity rates. The remuneration of these workers with high salaries enhances their capacity of spending, saving and investing, which in turn lead to increased revenues with spill-over economic benefits. Bloom *et al.*'s (2006) study recommends that more

investment in the African higher education system might speed up the diffusion of knowledge and technology and help reduce poverty in Africa.

The 2008 World Bank report: *Accelerating Catch-Up: Tertiary Education for Growth in Sub-Saharan Africa,* further emphasised that improving higher education systems should sit at the top of sub-Saharan Africa's development agendas. This is because skills and capacities for the knowledge-based economy are built at the higher education level (World Bank, 2008; Bloom et al. 2014; Teferra, 2016). All in all, the four seminal World Bank reports since 2000 illustrate the World Bank's change of view regarding Africa's higher education. The World Bank has begun to realise that a well-functioning higher education system in Africa would develop citizens into well-educated personnel, thus capable of contributing meaningfully to the socio-economic development of their respective nations, as has been the case elsewhere.

Despite the World Bank's belated acknowledgement of the value of Africa's higher education in fostering development, it has remained steadfast in pursuing its neoliberal agenda (Brock-Utne, 2003; Teferra, 2007; Bloom *et al.,* 2014), which is contrary to promoting the egalitarian principles in the provision of higher education in developing nations. In theory, the use of donor support remitted to Africa from overseas agencies could be decided upon by the Africans or African universities themselves. In practice, this is rarely the case. By virtue of its economic influence, the World Bank is involved in formulating education policies and setting priorities in Africa (Brock-Utne, 2003; Assié-Lumumba, 2006; Metcalfe *et al.,* 2009; MacGregor, 2015). It regularly imposes its favourable education policies and practices and often declares that it will not fund what it perceives to be poor education policies or practices.

In the 2002 *Constructing Knowledge Societies* report, for example, the World Bank introduces a new condition: higher education only after satisfactory provision of basic and secondary education. The World Bank set 20% as the highest figure that should be remitted to tertiary education from a national total education budget, as illustrated in the following statement:

> Developing countries that devote more than 20% of their education budget to tertiary education, especially those that have not attained universal primary education coverage, are likely to have a distorted allocation that favours an elitist university system and does not adequately support basic and secondary education. (World Bank, 2002, p.xxiii)

A similar statement was made by the World Bank's senior Director in Education at the African Higher Education Summit in March 2015. The World Bank's senior director told the delegates in the summit that 20% of the World Bank's overall education investment in sub-Saharan Africa goes to higher education, and the World Bank "sees a strong demand for holistic support across all levels of education, because you cannot have good quality higher education if you don't have good quality basic education (MacGregor, 2015, para.14). The implication is that African countries should not invest more in the tertiary education level than basic and secondary levels of education to level the playing field and attain equality in education provision at all levels.

The World Bank tends to forget that it once downplayed the tertiary education level in developing countries and ensured it received dwindling funding, greater than any other level of education. The World Bank ignores the fact that the tertiary education level is made up of sub-levels that also demand adequate attention and funding. The World Bank defines tertiary education as "all post-secondary education, including but not limited to universities" (World Bank, 2013, p.1). Colleges, technical training institutes, community colleges, nursing schools, research laboratories, centres of excellence and distance learning centres comprise the Bank's definition of the tertiary education sector (World Bank, 2013).

African nations have to demonstrate that they deserve the World Bank's support. This "deserving" is measured in terms of their wholesome acceptance of the World Bank policies and conditions (Brock-Utne, 2003; Metcalfe *et al.*, 2009). On average, countries in sub-Saharan Africa spend about 20% of their education budget in tertiary education (MacGregor, 2015). The primary education level takes the largest of the government's education budgetary share in sub-Saharan Africa (URT, 2014b). In Tanzania, for example, the primary education level usually takes up to 60% of the country's education budget (URT, 2014b). This amount goes to the primary education level, despite its competing for budgetary

allocation with six other education levels: pre-primary; secondary; folk and vocational; technical; teacher education; and higher education. As a result, except for the pre-primary and secondary levels of education in Tanzania, all of the other four levels under tertiary education account for only 20% of the country's total education budget – therefore the lopsided nature of funding to tertiary education. At the same time, the tertiary education level, particularly universities, is mandated to perform three capital-intensive functions: teaching, research and service (community engagement and knowledge valorisation).

Arising from this discussion is a fundamental question: How can African policy-makers and educators formulate suitable education policies for their countries, whilst they are at the mercy of restrictive conditions imposed by supranational institutions? Irrespective of their political and financial influence, supranational institutions such as the World Bank, cannot provide the kind of support to Africa's higher education which is responsive to individualised nationalistic and nation-specific demands (Brock-Utne, 2003; Assié-Lumumba, 2006; Metcalfe et al., 2009). The World Bank contradicts even its own mission of supporting developing countries in poverty alleviation. As demonstrated in this discussion, the World Bank appears to have its own agenda and mission, which are not governed by the interests of African nation-states as a collective or as individual entities.

However, by virtue of their power and influence, supranational organisations such as the World Bank, can support African nations to develop a prosperous higher education sector and fight poverty without compromising their democratic principles. The infringement upon the autonomy and freedom of Africa's ability to formulate domestic policies and set national development priorities does not only jeopardise any initiatives to resolve higher education crisis in Africa, but also undermines the continent's efforts towards poverty reduction and resolution.

2.4.3 African political landscape

The political environment prevailing in Africa has seriously undermined higher education provision and the building of research capacity on the continent (Metcalfe *et al.,* 2009; Atuahene, 2011; Ngirwa *et al.,* 2014). Although Africa is

endowed with more natural resources than any other continent, its populace remains destitute and conflict-ridden (Martin, 2005; Metcalfe *et al.*, 2009; Ngirwa *et al.*, 2014). Civil strife, political mayhem and persecution in countries such as the Democratic Republic of the Congo, Somalia, Liberia, Ethiopia, Nigeria, Sierra Leone, Algeria and Uganda are manifestations of the seemingly intractable problems that many African nation-states contend with.

In the 1990s, for instance, Africa topped the world in terms of civil wars experienced. In fact, from independence up to the mid-2000s, twenty-seven African countries experienced coups d'état and twelve had unsuccessful coup bids (Moyo, 2010), and recently in October 2014, the Burkina Faso National Army succeeded in staging a coup, subsequently taking over the country's leadership in Burkina Faso. These hostile environments are infertile ground for the development of a prosperous higher education sector and for intensifying knowledge production and dissemination. The civil strife and military rule also creates a sense of insecurity among the workforce, eventually eroding any institutional autonomy and academic freedom within universities (Martin 2005; Metcalfe et al. 2009; Ngirwa et al. 2014).

Similarly, hostile environments also discourage foreign direct investment (FDI) in a country, as external investors and donors are usually fearful of cooperating with politically unstable nations. In March 2016, for instance, the United States-based organisation, the Millennium Challenge Corporation (MCC), withdrew around half a million US dollars ($472.8) grant proposed to fund the implementation of several development projects in the transport, energy and water sectors in Tanzania (Kimboy, 2016). The MCC board reached such a decision following the nullification of the Tanzanian Isles' (Zanzibar) 2015 general election by the Zanzibar Electoral Commission (ZEC), which the opposition party claimed to win, and repeated concerns of the international community such as the United Kingdom, the United States and Australia, that condemned the action as undemocratic and intended to infringe the opposition party's legal right to steer the country's leadership. On the whole, these numerous negative developments tend to undermine the socio-economic development of Africa in general, and the growth of higher education and research in particular.

2.4.4 Academic freedom and autonomy

Academic freedom and institutional autonomy constitute an important condition for nurturing knowledge creation and dissemination systems in universities (Altbach, 2013). Such autonomy denotes the right of universities to make decisions on core academic concerns, such as teaching or research. Academic freedom also refers to the independence of pursuing core academic concerns without external interference. The role of university academics as public intellectuals is to question and challenge the social, economic and political issues afflicting the wellbeing of their societies. As such, university academics often use the power of their expertise to challenge ruling governments in their countries. The practice of challenging the status quo by university intellectuals is tolerable, particularly in developed nations, but considered intolerable in many developing countries devoid of democracy as it is perceived as a threat, and governments tend to respond to any dissent with draconian tactics.

Despite the end of the colonial era, some university professors in Africa who dared to criticise ruling governments were reproached, fired, tortured, imprisoned, or even assassinated for their viewpoints (Teferra, 2007; Ngirwa *et al.,* 2014). In 1993, following student protests at Addis Ababa University in Ethiopia, 42 professors were peremptorily sacked (Ridley, 2011). Equally, five home-grown lecturers and 16 foreign lecturers were dismissed from the University of Dar es Salaam (Tanzania) in 1977 and 1979, respectively, for criticising government policies (Ngirwa *et al.,* 2014). Likewise, following his publication of a radical anti-capitalism novel *Petals of Blood* in 1977, a renowned Kenyan playwright, novelist, political critic and academic Ngugi wa Thiong'o came into conflict with the Kenyan regime (Bentley *et al.,* 2006). In the same year, Ngugi was arrested and detained without trial for a year after the performance of a Gikuyu language, a highly critical play, *Ngaahika Ndeenda* (*I Will Marry When I Want)* he wrote jointly with Ngugi wa Mirii. Fearing for his life, from 1982 Ngugi lived in exile, first in the United Kingdom and finally in the United States, where he remains presently (Bentley *et al.,* 2006).

Another victim of academic freedom infringement is Kenneth Good, a political scientist who has lived and worked in Botswana since 1990. In 2005 he was expelled from Botswana, after the presentation of his seminal paper entitled

Presidential Succession in Botswana, delivered at the University of Botswana earlier that year (Good & Taylor, 2006; Bentley *et al.,* 2006). These few cases exemplify some of the factors that contributed to the erosion of academic freedom and institutional autonomy, eventually leading to a drastic weakening of Africa's higher education generally.

African governments, by virtue of their national constitutions, also tend to clandestinely exert their control over universities through the appointment of university administrators, particularly chancellors, vice-chancellors and even members of the university governing council. Thus, African governments ensure a great deal of political interference in university affairs. In February 2016, for example, the Nigerian Minister for Education, without any apparent reason, dismissed 13 public university vice-chancellors (VCs) in the country and their respective governing councils, and the minister immediately announced the VCs' successors (Fatunde, 2016). The mass sacking and replacement of VCs, however, was momentary, following the Nigerian president's intervention. A month later, the president apologised for the education minister's action, after learning that the minister has violated the Nigerian University Act 2003 that gives power only to the university governing councils to select and appoint their VCs (Fatunde, 2016). Even then, the president's apology amounted to a recall of the university governing councils but not the VCs, as the newly appointed VCs had already reported to their duty stations.

In this context, government appointees have to act in favour of the government in order to secure their appointments. This situation usually leads to the development of two different classes within the university setting: pro-government administrators and impartial academic staff, looking at each other with distrust (Teferra, 2007; Ngirwa *et al.,* 2014). As a consequence, it becomes difficult for government appointees (senior university leaders) to defend the rights of those university researchers who want to go against the grain by exercising their intellectual freedom of analysing national issues objectively to the detriment of the interests of the powers that be. This is one of the tensions in developing university research and higher education system in general, because a successful culture of research requires a sense of collaboration where individuals cooperate with others within and outside of the university setting, to

produce knowledge and make use of this knowledge to improve the standard of living for all citizens.

2.4.5 Brain-drain and African intellectuals

The exodus of high-level manpower from Africa is the most serious challenge to university knowledge production and economic development on the continent. Brain-drain refers to the migration of skilled professionals, usually from low-income countries to high-income countries, in order to ply their trade and profession, in turn economically profiting the host countries. Literature across the globe has identified two types of brain-drain: internal brain-drain and external brain-drain (Benedict & Ukpere, 2012; Bairu, 2015). The former involves domestic or in-country movement of professionals, whereas external brain-drain involves the movement of professionals across countries or continents.

High-income countries host more than 60% of international migrants (OECD & UN-DESA, 2013). The OECD's and the United Nations' (2013) report found that one in every nine African-born professionals with a tertiary education were working and living in OECD countries. Comparatively, the figure was one in 30 for Asian-born migrants, one in 20 for European-born migrants and one in 13 for migrants from Latin America and the Caribbean. In other words, there was an increase of more than 50% of African migrants in the period of 10 years – from 1990/1991 to 2010/2011 – more than any other part of the world (OECD & UN-DESA, 2013). Indeed, the emigration rate of tertiary educated migrants from nine sub-Saharan African countries: Tanzania, Burundi, Malawi, Lesotho, Namibia, Mozambique, Niger, Zambia and Papua New Guinea, was 20 times more than the total emigration rates in 2010/2011, reflecting the movement of a highly-skilled workforce.

Although brain-drain is not unique to African professionals, as professionals from Asia and Latin America also regularly migrate to other countries, the scale and severity of Africa's brain-drain is that it occurs on the continent with not only a few number of researchers and experts but also on the continent which performs poorly in the world's knowledge production and economic development (*cf.*, UNCTAD, 2014; UNESCO, 2015). Through brain-drain, African countries lose their educational investments, a skilled workforce and future tax-revenues of the

workforce outside of the country (Teferra, 2007; Benedict & Ukpere, 2012; Bairu, 2015). The professionals outside of the country, who include university dons, create a skilled manpower gap necessary for steering innovations, managing research production and dissemination and creating businesses. This brain-drain results in the importation of expatriates from the same host countries at significant costs, something that costs African countries a high amount. It is estimated that African countries spend over US$ 4 million yearly in consultancy fees and expatriate perks (Bloom *et al.,* 2006, 2014).

Numerous reasons account for the exodus and brain-drain in Africa. Economic and security reasons appear to be the overarching ones (see subsections 2.4.3 and 2.4.4). As a strategy to curbing the brain-drain crisis, African universities, through personnel and expertise exchange programmes, could transfer human and material resources, knowledge and technology to their nations – as practised in countries such as India and China. India and China have both speeded up their technological advancement through tapping the know-how and experience of their professional immigrants, who work in the famous Silicon Valley in the United States (Benedict & Ukpere, 2012). Efforts are finally underway in some African universities as well. For example, the South African Network of Skills Abroad (SANSA), a network based at the University of Cape Town in South Africa, was launched in 1998, with the primary objective of connecting highly skilled South African expatriates with their home counterparts. Through SANSA, South African expatriates are encouraged to contribute their knowledge, expertise and skills to South Africa's development without their physical presence in the country (Benedict & Ukpere, 2012). Borders and distances are no longer a hindrance to the knowledge exchange and scientific collaboration in the modern world.

2.4.6 Language of academic, research and scholarly communication

Competence in the global languages of academic and scientific communications, primarily English which has a broad global reach, is essential for university research communities (Altbach, 2013), without which universities cannot function efficiently in global research and knowledge networks (Ondari-Okemwa, 2007; van Weijen, 2013; Gaus & Hall, 2016). Most of African universities operate

in a European language, either English in Anglophone Africa, or French in Francophone Africa, or Portuguese in Lusophone Africa. Many academics in Africa adopt English, Portuguese or French as their second or third language. As such, these scholars have to use languages that were not spoken during their formative years of childhood and have not yet been thoroughly mastered (Brock-Utne, 2003; Ondari-Okemwa, 2007; Teferra, 2016).

Arguably, the non-native language of academic learning and scholarly communication excludes the majority of African academics from participating in prestigious formal public discussions. Brock-Utne (2003) and Vuzo (2010) attribute the rote learning situation prevalent in African classrooms to unfamiliarity with the language of instruction by both the teacher and the student. This unfamiliarity with the language of instruction limits the effective development of abstraction skills, system thinking and fluency in communication (Brock-Utne, 2003; Ondari-Okemwa, 2007; Teferra, 2016).

Academics in Africa are also required to be involved in international forums of knowledge production and dissemination, through presenting their findings in international conferences and publishing their research in international peer-reviewed journals. African academics are, thus, placed at a major disadvantage because of these language fluency issues (Ondari-Okemwa, 2007; Altbach, 2013). Recent studies have examined impediments researchers from non-English speaking countries face when attempting to publish their research findings in international, peer-reviewed English language journals (*cf.*, van Weijen, 2013; Gaus & Hall, 2016). These studies found that writing in English is more taxing and time-consuming for non-native English speakers than for native speakers. Researchers experienced difficulties in reading and paraphrasing the works of others and expressing clearly their own ideas in writing.

Such impediments ensure that only a few papers by African academics are accepted for publication in top-tier international journals, and those African-based articles which are published, rarely become citation classics in high-ranked international journals (Ondari-Okemwa, 2007; Teferra, 2016). This implies that when considering publishing their research in high-ranked international journals, African academics and researchers have to let the native English proof-readers polish the language of their manuscripts before sending to

journals, which is expensive and thus call for a considerable investment of resources as well from governments and higher education stakeholders.

In summary, the discussion in this section has indicated major challenges that Africa has to contend with as a pre-condition for building a research culture within its higher education system. How the higher education sector in Tanzania has been faring with these complex and multifaceted challenges discussed thus far in its endeavour to develop a research culture, is the question that the subsequent chapters of this study address, specifically the empirical chapters. Towards this end, the following section (2.5) summarise and concludes the chapter.

2.5 Summary and conclusions

This chapter has described the core concepts of knowledge and knowledge-based economy (KBE) and analysed how universities can contribute to the success of the KBE and society's development in general, through knowledge production, knowledge transmission and knowledge transfer. The chapter has also discussed historical and contemporary challenges facing African universities in fulfilling the university's role of knowledge production and dissemination and contribute effectively to the success of the KBE.

The chapter concludes that universities around the world remain imperative to the success of the KBE. Accordingly, Africa's governments and higher education sector, in particular, need to lessen the impact of the challenges discussed, in order to pave the way for developing a prosperous research culture in their respective higher education institutions and making research output a basis for sustainable socio-economic development. In light of this, a review of literature pertaining to building a research culture in higher education is presented in the following Chapter 3.

3 Development of a Research Culture in the Higher Education Sector

3.1 Introduction

It follows from Chapter 2 that universities are central to stimulating the socio-economic development of a nation. The fundamental question is: How can a university participate effectively in promoting the socio-economic growth and development of a nation? In response to this question, higher education researchers (Altbach, 2013; Harle, 2013; Cloete *et al.,* 2015; Nguyen, 2016) consistently assert, that in order to contribute effectively to a country's socio-economic development, an institution needs to develop a research culture to enhance the production and application of cutting-edge knowledge. Such a line of argument motivates the present study to understand how the higher education sector, particularly in Tanzania as a part of sub-Saharan Africa, is developing a research culture. In light of this, there is a need to review both the theoretical and empirical literature on the development of a research culture in the higher education sector around the world, which is the focus of this chapter.

The current chapter is, therefore, organised into nine sections. After this opening statement, follows the importance of research in universities and national development in section 3.2. Characteristics and requirements of a successful research culture are discussed in section 3.3, followed by strategies to develop research in higher education in section 3.4. Section 3.5 examines case studies from two different universities concerning developing a research culture and connected with a debate on the link between research and teaching in a university in section 3.6. Furthermore, section 3.7 analyses previous research on the field of research culture in higher education that informed the conceptual framework guiding this study as described in section 3.8. Finally, section 3.9 summarises and concludes the chapter.

3.2 Importance of research in universities and national development

This section provides the rationale for why staff working at universities as academics and researchers should engage in research activity, and why a

research culture needs to be developed in universities. The benefits of research discussed include informing and enhancing the teaching and learning process; bolstering institutional prestige and funding; enhancing the professional capital for academics; serving as an indicator of accountability; strengthening university-industry links for knowledge valorisation; and fostering socio-economic growth and development.

3.2.1 Informing and enhancing the teaching and learning process

Research in universities informs and enhances the teaching and learning process particularly in maintaining the teaching and learning infrastructure (e.g., books and journals) and pedagogical practices, creating new disciplines, training new researchers and creating a venue for professional development for members of academic staff. Knowledge created from research upskills academic staff members with new research methods and literature that eventually facilitates their research productivity and the supervision of students' research (Quimbo & Sulabo, 2013; Nguyen, 2016). This is particularly true when the university is committed to research-led teaching and learning. Research-led teaching and learning, which is a current practice and expectation for many established and aspiring research-intensive universities (Quality Assurance Agency for Higher Education [QAA] Scotland, 2014), employs academic staff's disciplinary research in order to enhance student teaching and learning outcomes (Trowler & Wareham, 2008). Research-led teaching and learning has been found to assist in the development of research skills and critical thinking skills among students and academic staff members (*cf.*, Hattie, 2009; Healey *et al.*, 2010; QAA Scotland, 2014; Winch *et al.*, 2014).

3.2.2 Bolstering institutional prestige and funding

Studies show that there is a positive association between the research profile of the university and reputation (Atkinson & Blanpied, 2008; Russell Group, 2012). Similarly, many international university rankings are often based on research outputs (Bai, 2010; Hazelkorn, 2011; Wadesango, 2014). According to the 2016 Times Higher Education (THE) university rankings, universities such as Harvard, Stanford, Oxford, Cambridge and Massachusetts Institute of Technology have always been in the world's top ten because of their high research output (THE,

2016a). Although there exist reservations about these international university rankings because of data reliability (Hazelkorn, 2009, 2011), these rankings have been indicators of a successful higher education institution (Marginson & van der Wende, 2007; THE, 2016a), and have been closely observed by politicians, policy makers, researchers, students and the general public across the globe. Consequently, it has come to be universally accepted that top-ranked higher education institutions (HEIs) are often more research productive and make a significant contribution to society than other universities (Hazelkorn, 2009; Toutkoushian & Webber, 2011; Cloete *et al.*, 2015).

Reputation is essential to the HEIs' growth and sustainability. This is vividly true when there is a cut-off in the government's expenditure on universities (Bai, 2010; Bastos & Rebois, 2011). As such, a prestigious university tends to attract a large number of students that in turn secures income stream. The United Kingdom and the United States, for instance, have remained the most popular destinations for international students because of the immense research productivity and reputation of their academic staff members (OECD, 2011; Russell Group, 2012; Cloete *et al.*, 2015).

Likewise, as explained earlier in Chapter 1, many governments worldwide have introduced policies that link the funding of higher education institutions with research performance: e.g., the South Africa's Research Output Policy, the New Zealand Performance-Based Research Fund (PBRF), the United Kingdom's Research Excellence Framework (REF) and the Excellence in Research for Australia (ERA). Thus, a prestigious research university places itself in an advantageous position to attract and compete for funding. It is also the practice that many businesses and industries partner with prestigious research universities (see subsection 3.4.5) to seek and access knowledge and expertise in order to enrich their productivity and delivery of better services. As a result of this partnership, universities create an income stream.

3.2.3 Enhancing the professional capital for academics

Research constitutes a key component of academic staff assessment criteria, promotion and career advancement in many universities around the world (Bai, 2010; Wadesango, 2014; Nguyen, 2016). Furthermore, through research,

members of academic staff open doors for further lucrative opportunities, such as invitations to attend national and international conferences, and to serve in policy formulation platforms or as government advisors on different pressing matters (Altbach, 2013). An example from the Scottish context would be Professor Graham Donaldson, who was the chief inspector of schools before joining the academic cadre of the University of Glasgow (School of Education).

The Scottish Government, in November 2009, asked Graham Donaldson to review the teacher education programme within Scotland (Scottish Government, 2010, p.iii). Graham Donaldson's report generated 50 recommendations, which were all accepted by the Scottish Government to set out the process of overhauling teacher education in Scotland (McMahon, Forde & Dickson, 2015). Consequently, Graham Donaldson was employed as a part-time professor at the University of Glasgow and invited until present to advise the Welsh national curriculum. A similar case is represented in Tanzania, when Professor Herme Joseph Mosha from the University of Dar es Salaam, School of Education, was appointed by the Tanzanian Minister for Education and Vocational Training in 2010 to lead a team of experts in the preparation of the national higher education development programme (HEDP) for the 2010-2015 period (URT, 2010b).

3.2.4 Serving as an indicator of accountability

In recent decades, research has become an important indicator of university performance (Bai, 2010), particularly in countries such as Tanzania, where higher education is predominantly government-funded and is required to undertake research, in addition to teaching, by the national higher education policy. In consequence, higher education stakeholders expect to see universities held accountable for the government expenditure on them. University accountability is often measured by the number of graduates produced annually and the sheer volume and quality of institutional research outputs (Ito & Brotheridge, 2007; Cloete *et al.,* 2015; Teferra, 2016). Research, therefore, becomes an essential mission of the university and an indicator of its performance.

3.2.5 Strengthening university-industry links for knowledge valorisation

Research expedites partnership for knowledge transfer and translation – knowledge valorisation – between universities and industries as well as the government and/or wider community. The partnership among the three entities of the university, industry and government is also called the triple helix, and it has been central for spearheading the transfer and translation of knowledge produced from universities (Etzkowitz & Leydesdorff, 2000; McConnell, 2002; Kruss *et al.,* 2015; Pinheiro & Pillay, 2016). Many businesses and industries partner with universities, particularly research-intensive universities, in order to produce more products and better services for their organisations (McConnell, 2002; Kruss *et al.,* 2015). The libraries and laboratories of many research-intensive universities have become the seedbed for various technological breakthroughs such as the DNA fingerprinting, satellite communications, nuclear energy, hybrid seeds and the Internet.

Nokia, for example, partners with the University of Cambridge in nanotechnology research projects and with the University of Glasgow in human-computer interaction research. The Bill and Melinda Gates Foundation has invested heavily in HIV vaccine research both at University College London and Imperial College London (Russell Group, 2012). Apart from producing knowledge that helps improve living standards, such kinds of partnerships have become a great source of income for universities and their respective countries as well (see subsection 3.2.2).

3.2.6 Fostering socio-economic growth and development

University research is vital for driving socio-economic growth and development, particularly in the present globalised and competitive knowledge-intensive world. Research, for instance, provides insights and innovative ideas that deepen understandings of various socio-economic phenomena and facilitates the solving of practical problems in order to improve the standard of living (Aebischer, 2015; Cloete *et al.,* 2015). Recent studies conducted in the United Kingdom, Malawi and South Africa found that university research is essential to supporting innovation and creating a base for national economic development and

competitiveness (*cf.*, Kelly *et al.*, 2014; Hermannsson *et al.*, 2015; Kruss *et al.*, 2015; Cloete *et al.*, 2015; Hermannsson & Lecca, 2016).

Equally, empirical evidence on the role of higher education in bolstering economic development has highlighted the role played by knowledge in the transformation of Asian countries such as Singapore, South Korea, Hong Kong and Taiwan (the Asian Tigers) into the fastest-growing economies. The Asian Tigers are renowned for producing scientific knowledge, which is then applied in production processes (Bloom *et al.*, 2014; Pinheiro & Pillay, 2016). As such, knowledge, particularly in the present global economy, has become a controller of other production factors: labour, land and capital.

Generally, the foregoing discussion suggests that there are a lot of benefits that accrue from university research, which range from an individual member of academic staff to higher education institutions, as well as to national and regional economies as a whole (Bloom *et al.*, 2014; Kruss *et al.*, 2015; Pinheiro & Pillay, 2016; Hermannsson & Lecca, 2016). However, not every university can possibly chart the institutional and the national development path – only universities that engage intensively in research are better placed to chart such a path. The central question is: What differentiates universities with a high commitment to research from those with a low commitment? This question is addressed in the following section (3.3), which illustrates characteristics and requirements of a successful research culture in a higher education institution.

3.3 Characteristics and requirements of a successful research culture

Understanding the characteristics and requirements of a successful research culture is necessary in order to begin thinking of the kind of energy, infrastructures, resources and strategies needed for developing research in universities, particularly those characterised with low research productivity. In the attempt to define and study successful research institutions, analysts have identified four complementary characteristics that make research prosper in universities, namely, the serious dedication to research, the presence of highly talented and committed academic staff and students, favourable and efficient governance, and sufficient resources for efficient research and learning

(Bienenstock, 2008; Salmi, 2009; Altbach, 2013; Chirikov, 2013; Shin & Lee, 2015). These characteristics are discussed in the subsequent subsections.

3.3.1 Serious dedication to research

A successful research institution prioritises research as equal to other core university functions: teaching and community service. Contrary to the teaching-dominated institutions that often disregard research, research in a successful research institution is pervasively used to inform teaching and community service (Taylor, 2006; Altbach, 2013; Nguyen 2016). Successful research institutions are also committed to the production, dissemination and translation of excellent research within various fields and disciplines, and have the culture of research that pervades all of their functions from teaching/learning to community and industrial engagement. These institutions involved in the production of basic and applied research, deliver research-led undergraduate teaching and learning, run extensive postgraduate research programmes and leverage local and international research networks and partnerships (Taylor, 2006; Altbach, 2013; Shin & Lee, 2015).

Shin (2013) analysed features and achievements shared by world-class research universities from a sample of 200 universities sought from the four prestigious international rankings. The study found that research universities place emphasis on research, produce highly read and cited research, house distinguished professors, secure large competitive research grants or funds and maintain a great deal of partnership and engagement with the industry, government and community members and organisations for knowledge dissemination and translation. The implication is that a vibrant research base shapes the nature, practice and content of the teaching and community service functions in a successful research institution.

3.3.2 Talented and committed academic staff and students

A pool of talented and committed members of academic staff and students is a *sine qua non* for developing successful research institutions. Academic staff members in successful research institutions possess the advanced academic qualifications, usually doctoral degrees from highly respectable universities,

which provide them with confidence and skills to undertake research. While there are no ready-made statistics, many universities in the developing world are made of staff who do not have a doctorate (Altbach, 2013; Teferra, 2016). The Tanzanian flagship university – the University of Dar es Salaam (UDSM), for instance, was found to accommodate a large proportion (70%) of academic staff without doctorates (Peter, 2014). Similarly, Cloete *et al.* (2015) found that only three universities (Ghana, Botswana and Cape Town) had at least 50% of academic staff with doctorates among the eight African flagship universities involved in their study. This is contrary to other countries' flagship universities such as China (the Beijing University), Hong Kong (the University of Hong Kong) and Brazil (the University of Sao Paulo), where up to 99% of academic staff members possess doctorates *(*Ma, 2013; Gerard *et al.*, 2013; Balbachevsky, 2016*)*.

Successful research institutions also benefit enormously from the students' creativity and efforts. Both undergraduate and postgraduate students in successful research universities are familiarised with the research culture and avail of the opportunity to engage in research (Bienenstock, 2008; Salmi, 2009; Altbach, 2013). In this regard, their selection tends to be competitive and selective in order to ensure that admitted students are of a high standard. The 2010 Scholastic Assessment Test (SAT) scores of admitted students found that the world's top ten research-intensive universities from North America such as Yale, Harvard, the California Institute of Technology and the Massachusetts Institute of Technology were the most selective higher education institutions in student admission (Altbach, 2013; Heyneman & Lee, 2013). Harvard University, for instance, accepted 6% only of its total applicants, while the acceptance rate at Yale stood at 8%.

Selectivity in admissions echoes in UK's research universities as well, where the acceptance rate at Oxford and Cambridge was 18 and 21%, respectively in 2010 (Heyneman & Lee, 2013). This suggests that talented students are central for successful research institutions to facilitate the performance of ground-breaking research in collaboration with their tutors and research supervisors who are also experts in their areas of expertise.

3.3.3 Favourable and efficient governance

Successful research institutions are characterised by having a political strength to withstand external interference and encumbered government policies where their leaders have autonomy in making decisions concerning academic core activities, university policy and direction, recruitment and financial affairs (Bienenstock, 2008; Salmi, 2009; Altbach, 2013). This allows for the effective management of resources and responding to the changing needs of the market. The meteoric rise of the Hong Kong University of Science and Technology (HKUST) to fame and innovative character is greatly attributed to the highly autonomous environment prevailing in the Hong Kong higher education system (Gerard *et al.,* 2013). HKUST is a public university in Hong Kong founded in 1991. Although it is a public institution, HKUST is not required to observe conventional practices observed by the other two public universities in the country such as uniformity in running degree programmes and recruiting faculty deans and students (Gerard *et al.,* 2013).

Likewise, the UK's research universities are amongst the most autonomous in Europe regarding staffing matters, selection of senior leadership and setting their budgets without government interruption (Russell Group, 2012). Although such autonomy is prone to be infringed in Scottish universities, as the Scottish Government has introduced the higher education governance bill that aims to control university governance in Scotland by selecting candidates to the university councils (Carrell, 2015).

3.3.4 Sufficient resources for efficient research and learning

Successful research institutions recognise that the efficient research and learning requires state-of-the-art libraries, classrooms, seminar rooms, high-quality laboratories and the fastest internet connections, in order to easily communicate and access diverse and rich data (Altbach, 2013; Shin & Lee, 2015). While internet access and library collections have not been reliable and up to date in many unsuccessful research institutions (Dessie & Mesfin, 2013; UNESCO, 2015), successful research universities are investing heavily in research and teaching infrastructures. The Bodleian Library at the University of Oxford, for example, is the UK's largest and most prestigious university library. It holds

about 11 million volumes of library collections and grants more opportunity for accessing online databases and publications than any other UK universities (Russell Group, 2012).

Successful research institutions also require adequate and steady funding to effectively facilitate the performance of research, teaching and community service. Top-ranking countries for producing ground-breaking research allocate a considerable amount of GDP to research and development (R&D). The United States leads with the allocation of 28%, followed by China (19.6%), Japan (9.6%), Germany (5.7%), Republic of Korea (4.4%) and the UK (2.5%). Conversely, statistics in sub-Saharan Africa show that only one country had an allocation of 1%, while the allocation for many other sub-Saharan African countries fell below 0.4% (UNESCO, 2015). Without increasing the allocation of GDP to research and development, sub-Saharan Africa and other regions with minimal allocations will continue to struggle to improve the research capacity within their higher education institutions.

To summarise, succeeding in building successful research institutions as illustrated in this section, is not accidental nor is it a straightforward activity. Rather, it is a product of a continuing series of planned policies and actions that eventually produce desirable outcomes and make some institutions and countries more prominent and successful in research than others. In light of this, the next section (3.4) presents both national and institutional strategies used to develop research in different higher education systems.

3.4 Strategies to develop research in higher education

The discussion of strategies that are used to develop university research in this section is divided into two major aspects: government initiatives and institutional initiatives. Each aspect is presented in the following subsections (3.4.1) and (3.4.2).

3.4.1 Government initiatives

In their endeavours to develop university research, policymakers, national education leaders and university leaders pay attention to four key initiatives at

national level: mission differentiation, deregulation of governance, criterion-referenced faculty recruitment and promotion systems as well as mixed funding structure. Each of the four government initiatives are explained as follows.

3.4.1.1 Mission differentiation

Countries that have succeeded in developing a successful research culture in their higher education systems begin with mission differentiation within higher education institutions (Shin, 2013; Altbach, 2013; Hladchenko *et al.*, 2016). Mission differentiation involves selecting a small number of universities, usually the best, and moulding them into research-based institutions. The other universities are designated as teaching-based institutions that focus more on teaching and less on research. In this regard, there have emerged research-intensive universities and teaching universities within higher education systems, with each type of the university receiving different treatment in terms of funding and human resource management. Research-intensive universities often receive more research-specific funding, employ academic staff based on their research performance and minimise the teaching workload.

The most notable mission differentiation can be drawn from the 1960 California's Master Plan, when the US state of California developed a three-tier classification of its higher education institutions: the University of California (UC), California State University and California Community College systems (Shin, 2013; Altbach, 2013). Other countries such as Australia, the UK, Germany, China, Korea and Hong Kong, have also differentiated the mission within their higher education systems, which enable these countries to develop successful universities with a high research standing both locally and internationally.

However, mission differentiation is not without its criticisms. Some consider it to be a way of promoting elitism and discouraging competition among universities, as selected universities may continue to remain at the top of academia, as they receive special attention from the government and the wider community (Shin and Lee, 2015; Hladchenko *et al.*, 2016). Many governments are familiar with these shortcomings and they have been restructuring their higher education policies to suit the present competitive world. As a way of addressing these shortcomings, some governments such as those of South Korea, China and

Germany have expanded the number of universities in their lists of research-based institutions. They have also safeguarded the entrance to national research university to be merit-based, such that universities are evaluated after every five years and the outcome of the evaluation can lead to relegation for underperforming institutions or promotion for excellent performing institutions.

3.4.1.2 Deregulation of governance

As explained in section 3.3, favourable and efficient governance is one of the key features demonstrated by a successful research institution of higher education. As such, many governments have introduced deregulation policies that foster more autonomy in universities. Deregulation of governance implies entrusting universities with the task of staff recruitment, financial management and selection of leaders with no or little government interference. To promote self-governance of their higher education institutions, many governments in Europe and Asia have transformed their national universities, particularly the research-intensive universities, from national organisations into independent public corporations (Shin, 2013). For instance, Korea transformed its national university – Seoul National University – into a corporate entity in 2010, Singapore in 2006, Taiwan in 2008, China in 1998 and Japan in 2004. In consequence, these universities have become more autonomous in budgeting, personnel and management issues, more productive in research and they have contributed effectively to the economic transformations of their countries (Shin, 2013; Heyneman & Lee, 2013; Shin & Jang, 2013; Hladchenko *et al.*, 2016).

3.4.1.3 Criterion-referenced faculty recruitment and promotion systems

Faculty recruitment and promotion in governments that have successfully managed to develop university research to the extent of becoming world models is criterion-referenced. Criterion-referenced in these institutions involves the use of one's ability, qualification and quality of performance in order to secure university employment and promotion in various ranks associated with the academic career (Shin, 2013; Nguyen, 2016). While a meritocratic approach to personnel management is common in most European and American universities, promotion of academic staff in some Asian and African countries does not follow criterion-referenced, where a first full-time appointment becomes a valid visa to

a permanent job (Altbach, 2013; Nguyen, 2016). Nonetheless, more recently, some governments in Africa (e.g., South Africa, Botswana, Tanzania and Nigeria) and Asia (e.g., China, Korea) have adopted meritocratic approaches to academic staff hiring and promotion systems, in order to improve the research profile and productivity of their higher education institutions. As such, academic staff career advancement is now based on individual academic's research output, such as research-based publications as opposed to seniority and patronage as previously used.

3.4.1.4 Mixed funding structure

There are two main methods of funding universities adopted by governments around the world: block funding and performance-based funding. Block funding involves funding universities based generally on the annual student intake while the performance-based funding considers the institution's performance. While some governments particularly in developing countries continue to use only block funding, many governments in developed and emerging economies use both block funding or special funding allocation and performance-based funding. Governments, such as Germany, Spain, Italy, Taiwan, Korea, Japan, Malaysia, Singapore, use special funding to fund science and innovation and allocate some monies for open competition (Shin, 2013; Heyneman & Lee, 2013; Huber, 2016). These special funding initiatives in these countries have contributed meaningfully to research excellence and productivity (Shin, 2013; Huber, 2016).

Competitive funding allocation is based on the evaluation of the research performance of an institution, which is also called the research performance-based funding. The use of research performance-based funding is largely practised in developed and emerging economies, which is underpinned by a strong drive towards improving the quality and performance of university research, and the inherent requirement of these universities to become accountable for their funding (Edgar & Geare, 2013; Leathwood & Lead, 2013). The United Kingdom in 1986, for instance, introduced the Research Assessment Exercise (RAE) and has since 2014 introduced the Research Excellence Framework (REF). Australia in 1988 introduced the Excellence in Research for Australia (ERA); New Zealand in 2002 instituted the Performance Based Research Funding (PBRF) exercise; South Africa in 2003 founded the Research Output

Policy; and Hong Kong in 1993 instituted the Hong Kong University Grants Committee (HKUGC) to evaluate the research productivity of universities within Hong Kong.

The research performance-based funding in these countries requires universities to submit their research outputs for assessment to a peer-review panel at least for every four years. The assessment results form the basis for the allocation of research funds to universities by higher education funding councils (Ito & Brotheridge, 2007; Edgar & Geare, 2013).

Critics have criticised the research evaluation schemes, arguing that they encourage elitism and inequalities within universities and among academics (Barker, 2007; Leathwood & Lead, 2013; Murphy & Sage, 2014). The criticisms levelled against these research evaluation schemes notwithstanding, linking funding to research performance in universities, has strengthened university research and attracted more resources to further enhance the research dimension (Bai, 2010; Shin, 2013; REF, 2014). The Australian government, for example, has changed its higher education funding policy from student per capita to the institutional research performance, as a result of the research performance assessment scheme (Bai, 2010). Similarly, Masipa's (2010) PhD dissertation, which was based on a study of three models of research performance assessments in the Netherlands, New Zealand and the UK, established that research evaluation exercises in these countries had succeeded in improving university research performance to the extent of modelling other countries across the world.

3.4.2 Institutional initiatives

Institutional initiatives commonly used to develop research include mentoring early career researchers, institutional collaboration and networking, incentivising and rewarding active researchers and instituting postgraduate and professional development programmes. Each of the four institutional initiatives are clarified as follows.

3.4.2.1 Mentoring early career researchers

Mentoring junior researchers in research and academic writing is seen as the lifeblood of higher education institutions seeking to develop a research culture. It is a practice for many research-intensive universities to attach junior researchers to a group of experienced researchers to tap their research knowledge and skills. Mentoring and participation in research teams or research communities facilitated learning of research skills among early career academics and budding researchers in South Africa, the United Kingdom, New Zealand, Canada and Norway (van der Merwe, 2011; Hill & Haigh, 2012). Also, Stephens *et al*. (2011) found that mentoring was an essential component of a successful research capacity-building in the United States. Therefore, they urged HEIs to include mentoring as an indispensable component of research activities. However, Stephens *et al*. (2011) cautioned that mentoring should not be viewed as an incidental activity, thus, it is reasonable to train mentors formally and acknowledge their importance whether in-kind or financially.

3.4.2.2 Institutional collaboration and networking

Institutional collaboration and networking serve as another strategy in the development of a research culture in HEIs. Canada, South Africa and Russia are some of the countries whose universities are increasingly integrating internationalisation by establishing Research Chairs and Postdoctoral Fellowships positions with a purpose of attracting senior researchers and excellent young researchers throughout the world (Jacob & Meek, 2013). In Sweden and the United States, institutional and researchers' collaboration were seen as an important strategy to link researchers from different disciplines, stimulate researchers intellectually, broker external opportunities and attract external funding (Bland *et al.*, 2005; Magnus, 2012). Furthermore, the collaboration between African countries and German through the German Academic Exchange Service (DAAD) has resulted in creation of five Centres of Excellence in Africa including Health in Ghana, Microfinance in Congo, Law in Tanzania, Criminal Justice in South Africa and Logistics in Namibia, with the aim of strengthening research and development (DAAD, 2011; Swilling *et al.*, 2011).

3.4.2.3 Incentivising and rewarding active researchers

Various incentive mechanisms and reward schemes have been devised in different universities to promote research and researchers. Integrating research in academic staff assessment, promotion and career advancement is one of the incentive mechanisms used to foster a research culture for many HEIs across the world (Bai, 2010; Wadesango, 2014). Other HEIs provide pecuniary incentives such as 'seed funding' to their academic staff members to conduct research and disseminate their research outputs. Active researchers are also rewarded time to engage in research and being granted sabbaticals or reduction in teaching workload. In their study which determined research culture among universities in the Philippines, Quimbo and Sulabo (2013) found that the most common incentives provided to academic staff across all of the five universities studied were honorarium and credit load. These incentives were found to have contributed significantly to academic staff research self-efficacy and productivity. Quimbo and Sulabo's (2013) findings corroborated previous research in this area, that research incentives play a significant role in motivating members of academic staff to accomplish their research undertakings.

3.4.2.4 Instituting postgraduate and professional development programmes

Postgraduate and professional development programmes provide a conducive and enabling environment for members of academic staff and students to gain and hone their research skills. In a survey-correlational study on determinants of the research culture in the Philippines' universities, Quimbo and Sulabo (2013) found that educational attainment at postgraduate level and research experience boosted the research confidence of academic staff and significantly impacted their research productivity. The implication is that the higher the educational attainment and the more years of cumulative research experience, the greater the chance of producing a voluminous research output. As such, Quimbo and Sulabo (2013) recommended strong faculty development programmes and a good incentive system for committed researchers.

In conclusion, this section as a whole has presented national and institutional strategies that are used to develop university research in different parts of the

world. It should be noted that given the contextual differences which characterise various countries, not every strategy can produce similar results in one context as it does in the other. Nevertheless, bridging national and instutional strategies as well as a constant refining of the strategies to suit the purpose and needs of the time and context could produce desirable effects (Hazelkorn, 2005; Edgar & Geare, 2013; Leathwood & Read, 2013; Nguyen, 2016). The following section (3.5) presents case studies on the practical development of a research culture.

3.5 Case studies on developing a research culture

The case studies on the practical development of a research culture presented in this section are sourced from two different universities, found in New Zealand and Ghana, as reported by Pratt *et al.* (1999) and Puplampu (2012), respectively. The two case studies are purposely and prudently chosen to represent both the developing and the developed world contexts. New Zealand represents a case of developed countries, Ghana that of developing countries. Moreover, the two case studies are carefully chosen because they represent both the public and private university contexts from formerly teaching-dominated universities. For this reason, the two cases provide an informative framework for the development of a research culture in teaching-dominated universities, which is also the focus of the present study.

3.5.1 The New Zealand case study

The New Zealand case study is a research capacity building model from the University of Waikato, School of Management Studies (SMS), which covered the 1989-1996 period (Pratt *et al.*, 1999). It is vital to note that during the 1990s, the government of New Zealand had granted permission to polytechnics to offer degree programmes, and introduced the performance-based funding where the institutional research performance became the basis for receiving the government funding. In other words, higher education institutions in New Zealand, particularly teaching-dominated ones, were found wanting in relation to a new performance-based policy and a competition from degree-offering polytechnics that were in dire need of the university title. During the reporting

of this case study, two of the New Zealand polytechnics had already applied to the government for the university designation.

The authors of this case study were, respectively, the School Dean (Mike Pratt), Director of Research (Dimitri Margaritis) and Accounting Department Chairperson (David Coy) of the University of Waikato's School of Management Studies (SMS). At this stage, the research productivity of the SMS was low, as promotion and tenure in this institution were based on teaching and administration. The three authors of this case study who were also the SMS leaders realised that they needed to transform their teaching-dominated institution into a research-intensive institution in order to attract more funding from the government, donors and students. The transformation, among others, needed a corps of highly trained academic staff with research prowess. Following this need, the SMS leaders established strategies for developing the institution's research culture.

The developed set of strategies was aimed at two categories of changes: changes in beliefs and attitudes and changes in behaviour and practices. Changing beliefs, attitudes and values about research involved open discussion at Faculty meetings, instilling confidence and inspiring academics to begin to value the importance of research. Changing academics' behaviour and practices, on the other hand, was initiated through a set of strategies such as the introduction of a research-based reward system, personnel management policies and a research-funding basket to support the SMS research activities. An excellent research record was now a prerequisite for academic staff promotion, appointment to managerial positions and teaching executive programmes which had extra payment.

After eight years (1989-1996), Pratt *et al*. (1999) produced a report that revealed the changing culture of the SMS "towards one that embraces research as part of the role of a university academic" (p.54). Statistically, the academic staff workforce with doctorates increased from 24 to 43, doctoral level enrolment rose from 10 to 58 students, and conference presentations raised from 13 to 89. Publications in both local and international refereed journals rose from 41 in 1989 to 259 by 1996. The success of this New Zealand model suggests that it is imperative to change the attitude and perceptions (culture) of

academic staff members towards recognising research as important and worthwhile. Indeed, the institution and implementation of a workable set of policies and practices, constitute a crucial element in the development of a research culture within a higher education institution.

3.5.2 The Ghanaian case study

The Ghanaian case study is reported by Puplampu (2012) from the Central University College (CUC); the largest private-owned university in Ghana. This Ghanaian case study is the outcome of a two-year (2010-2012) intervention and initiatives undertaken to develop a culture of research in the Central Business School (CBS), one of the Central University College's Schools. From its inception in 1998 to 2010, the CBS was dominated by teaching activity, whilst only two out of 40 academic staff members had PhDs, and only four articles were published. The author, who was a new Dean appointee in 2010, was determined to develop a research culture in the CBS within his three-year term of Deanship. He conducted an institutional needs' assessment to collect relevant information needed for informed intervention. The information gathered included obstacles to research productivity, academic staff conception and perception of research, and changes needed to be adopted to develop a research culture.

Data from the institutional needs' assessment formed the foundations for a number of interventions instituted to develop research in the CBS such as institutional restructuring, open faculty meetings, individual counselling sessions and regular research seminars. The CBS was restructured from three academic Departments to six, based on similar disciplines to enhance research focus and collegiality. Open faculty meetings helped instil and inspire a sense of commitment to research, through listening to a personal success story and examples from successful senior researchers found internally and externally to CBS. Individual counselling sessions involved meeting with each member of academic staff to discuss research agenda, personal obstacles to engaging in research, career options and setting personal goals. All these were recorded in an individual academic file for regular monitoring and further action. Finally, regular research seminars were used for academic staff members to present their research manuscripts and receive constructive criticism and suggestions.

After two years of interventions, Puplampu (2012) reported a considerable change of the culture of research in the Central Business School (CBS). The number of academic staff who were on doctoral level programmes studying in Ghana, Switzerland, Malaysia and the United Kingdom grew from zero in 2010 to 14 in 2012. Peer-reviewed journal articles increased from four to 20, and 10 members of CBS academics had presented papers in international conferences in Greece, Finland, Morocco, Canada and the United States, something that had never happened before. Moreover, the academic staff research seminars had become part of CBS' institutional norms, with its fixed timetable in the School's annual calendar. Similarly, the position of research coordinator, a research policy document and a CBS working paper series were instituted.

The success story of this Ghanaian model complements the New Zealand model. This Ghanaian model has shown that the establishment of workable institutional policies, care for individual academic welfare, advising and guiding academic staff members when necessary and exposing these academics to research capacity building opportunities, may lead to the development of a prosperous research culture.

Generally, the two case studies have established that participatory leadership, decentralisation of management, mentoring and counselling, research training, institutional restructuring and the role of external stimuli such as the government policies, form the basis for changing the culture of research within a higher education institution. All of the authors of the two reviewed cases were respective deans of their schools and have displayed a strong commitment to developing a research culture within their institutions. The success of the School leaders of the two cases was also supported by the decentralisation of management. As demonstrated in the cases, these leaders had the power to develop and quickly communicate research policies and initiatives to their respective academics without being impeded by the top university administrative.

Furthermore, caring for both social and professional problems of individual academics through personal mentoring, counselling and research training were learnt from these cases as crucial to developing a research culture. The restructuring of the institution through the formation of small teams or

departments of similar disciplinary lines and the establishment of research positions or offices is also necessary for changing the culture of research within institutions. These interventions are worthy of attention to countries and higher education institutions that need to develop research. By and large, a key feature of both case studies is the way in which the relationship between research and teaching was significantly integrated which normally presents a daunting challenge, as discussed in the following section (3.6), which discusses a debate on the relationship between research and teaching in the university setting.

3.6 Debates about the relationship between research and teaching

Balancing research and teaching in an institution has been one of the core management philosophies in successful research institutions, as elaborated in previous sections. Nonetheless, combining research and teaching in one institution is not without controversy. For a period of three decades, there has been an ongoing debate concerning the link between teaching and research, which this section discusses in a bid to understand the opportunities that can be missed if these two activities are separated, and/or if students or undergraduates are taught by teaching-only HEI staff or attend teaching-only universities.

Moreover, this discussion is relevant to the present study as the debate continues to influence university management policies and practices at the national and international levels (Trowler & Wareham, 2007; Hajdarpasic *et al.*, 2013). Some UK universities have begun shifting their academic staff members into teaching-only contracts, and after being offered the option to give up research, a third of academics in an Australian university accepted teaching-only positions (Fazackerley, 2013). Likewise, many universities in the developing world survive as teaching institutions, with research activities accorded little time, while members of academic staff who are pursuing research are accorded limited incentives (Trotter *et al.,* 2014; Nguyen, 2016).

Central to the debate on the relationship between research and teaching are two popular views: the integrationist view – teaching and research are mutually compatible – and the independence view – teaching and research are inescapably

incompatible (Healey *et al.*, 2010; Hajdarpasic *et al.*, 2013), which are discussed as follows.

3.6.1 The integrationist view

The proponents of the integrationist view hold the conviction that research contributes to teaching and vice versa. The research component forms the main distinction between universities and other teaching institutions in the community (Deem & Lucas, 2007; Bridges, 2009), in addition to being a central part of what defines higher education. Supporting the integrationist view, Hajdarpasic *et al.* (2013, p.3) raise the question: "Can higher education be judged to be 'higher' if it does not involve a culture of research?" The integrationists further argue that university research prospers when it is tested through teaching and effective university teaching takes place when it is driven by research. Any attempt to separate teaching and research tends to undermine the apparently symbiotic relationship between the two.

3.6.2 The independence view

The proponents of the independence view assert that teaching and research are mutually incompatible undertakings because they involve different kinds of preparation and require different personality characteristics (Marsh & Hattie, 2002; Bai, 2010). As research is not seen as a prerequisite for effective teaching, the proponents of the independence view further argue that research may even have damaging consequences on teaching effectiveness. The rationale is that time and energy devoted to one tends to decrease the commitment that can be dedicated to the other, and that participating in leading-edge research can distract the academic staff from teaching-related activities such as lesson preparation and assessment. They go on to claim that cutting-edge research is conducted in institutions that have no undergraduate teaching, and quality teaching takes place in institutions where academics pursue little research.

3.6.3 What does the empirical literature say about the debate?

Since three decades ago, a number of scholars have been interested in establishing empirical evidence to support the teaching-research relationship. Nonetheless, studies on the teaching-research nexus have come up with

contradictory results. The contradiction exists not only within studies that employed different research methodologies but also in those using the same research methodologies (Bai, 2010). While quantitative studies, for example, Hattie and Marsh (1996) and Wei *et al.* (2007), generated unrelated findings, the same applies to studies of Robertson and Bond (2001) and Healey *et al.* (2010) that used a qualitative paradigm. The controversy, as previously suggested, gave rise to two polarised strands (Berrell, 1998): one strand arguing for the coexistence of teaching and research under one roof, and the other firmly inclined towards teaching and research as inescapably incompatible components.

Hattie and Marsh's (1996) study is significant in understanding the relationship between research and teaching. It is perhaps one of the seminal works widely cited in this debate. They studied a number of models considered useful in explaining the teaching-research nexus and then performed a meta-analysis using 58 existing studies. Hattie and Marsh (1996) found the absence of relationship between research and teaching, and they concluded that it is purely myth to believe that teaching and research are intimately related. Inevitably, Hattie and Marsh's (1996) work led to contention and debate. In particular, the study has been criticised for neglecting contextual and individual factors for which teaching and research occur, a narrow interpretation of both teaching and research, and a heavy reliance on the correlational research design (Halliwell, 2008; Roux, 2012; Hajdarpasic *et al.,* 2013). It is argued, in Hart and Marsh's (1996) study, that research is conceptualised as a product through looking at publications, and teaching as an attainment through looking at students' ratings.

Some critics who examined the teaching-research nexus, using qualitative research design, found the existence of an intimate relationship between the two (*cf.,* Colbeck, 1998; Elton, 2001; Hajdarpasic *et al.,* 2013). These studies concluded that the relationship between teaching and research can be empirically established by qualitative research and by viewing research and teaching not as outcomes.

In response to the criticism levelled at Hattie and Marsh (1996) and other related studies, Hattie and Marsh in 2002 undertook a new study (2002), which reached a similar conclusion: that research and teaching are not related. Marsh and Hattie (2002) concluded that researchers should agree on the non-existence of a

correlation between research and teaching, and move onto researching how this relationship could be enhanced.

Some researchers have taken a different path on this debate by arguing that the teaching-research nexus can never be reasonably demonstrated without considering mediating factors. In his book *Scholarship Reconsidered: Priorities of the Professoriate,* Ernest Boyer (1990) challenged researchers to "break away from the tired old teaching versus research debate and define, in more creative ways, what it means to be a scholar" (p.xii). Boyer introduced the notion of scholarship in order to mediate the debate on the teaching-research nexus. The nexus between teaching and research should be understood in relation to the knowledge and understanding gained through one's involvement in the two processes of teaching and research (Boyer, 1990). Supporting Boyer's notion of mediating the debate with a scholarship variable, other researchers also bring in a similar notion of learning (*cf.,* Brew & Boud, 1995; Brew, 2010; Healey *et al.,* 2010).

Brew and Boud (1995) found that studies on the teaching-research nexus presupposed teaching as information transmission, hence teacher-focused and research as communication of ideas, and thus ignoring the process from which those ideas are developed. In this regard, they insisted on researchers conceptualising teaching and research in terms of learning. When debating on how research connects teaching, the focus should be on student learning, as the only teaching which is effective is that which considers what enables student learning and concentrates on student conceptual and attitudinal change (Brew & Boud, 1995, 2003; Hajdarpasic *et al.,* 2013). This implies that teaching cannot be isolated from the equation of what is learnt.

Equally, when considering how teaching informs research, the focus should also be on learning, which is, similarly, viewing research as a process wherein the researcher becomes primarily a learner, rather than a communicator of ideas or problem solver (Brew & Boud, 1995, 2003; Hajdarpasic *et al.,* 2013). Consequently, university students in recent years have increasingly become generators and users of knowledge generated from research through the practice of enquiry-based learning (EBL). EBL is regarded to be a means towards the bolstering teaching-research nexus in universities (Healey *et al.,* 2010). EBL is

related to research and is seen as a way of strengthening the teaching-research nexus, as it places both students and teachers as "compatriots in the search for knowledge" (Justice *et al.,* 2007, p.2). In consequence, EBL helps students achieve critical thinking skills and the ability for self-directed learning or independent enquiry, and facilitates the development of new lines of investigations on the part of academic staff members resulting from teaching and learning experience (Kahn & O'Rourke, 2004; Justice *et al.,* 2007).

The implication is that the teaching-research link can be realised when the knowledge learnt from research by the teacher or researcher is then applied to improving their own teaching, and applying what has been learnt from the teaching experience to improve their own research. The nexus between the two enterprises – teaching and research – can also be realised through engaging in enquiry-based learning or research-led learning in which students are placed in the centre of learning. Healey *et al*. (2010) and Hajdarpasic *et al*. (2013) are some of the empirical studies that have concluded that students, especially undergraduates, could miss opportunities such as the ability to conduct rigorous research and the capacity to use the acquired skills in future learning contexts and working environments if they attend teaching-only universities or are taught by members of academic staff who do not involve in research. Therefore, combining research and teaching in one institution and encouraging academic staff members to seriously undertake research should be seen as an imperative course of action. Following this understanding, the next section (3.7) reviews the current state of knowledge on research culture in higher education.

3.7 Current state of knowledge on research culture in higher education

Empirical studies on the development of a research culture in higher education are reviewed in this section in order to establish the current state of knowledge within the field and determine the knowledge gap that warrants further investigation. Only empirical studies published in the last 10 years (since 2005) have been included in this review, as the review intends to establish the latest policy developments and practices engaged in developing university research by different nations. The review, although not organised in subsections as such, focuses on four major areas: national and institutional policy directions for

developing research, approaches to developing research, challenges in developing research and factors necessary for establishing a successful research culture. Table 3.1 (p.84) presents a summary of key points resulted from this review.

In a comprehensive international study conducted in Canada, the United States, the United Kingdom and Australia, Taylor (2006) reported common characteristics found in the six studied research-intensive universities. The reported common characteristics include the presence of a vibrant university leadership which is aware of the energy and expenses needed for conducting research, academic freedom, steadiness of university mission and purpose, proactive academic staff development, less financial dependence on the government and strong support for research dissemination and application. Similarly, using interviews, observation and documentary review, Deem and Lucas (2007) found that a group of factors, such as academic staff competence and confidence, autonomy, recognition, motivation, time and financial resources, were necessary for enabling research cultures in the five studied UK universities. A similar group of factors were reported by Edgar and Geare's (2013) study which through survey and interview data identified determinants of university research performance in three of New Zealand's universities.

Writing within the American context, a survey of 1474 academics by Mullen *et al*. (2008) indicated that fiscal and physical resources, research-active mentors and peers, were deemed critical in supporting research initiatives of academic staff. Conversely, an interview study conducted in 25 research-intensive universities in the United States found that there was a lack of understanding of the requirements needed to undertake impactful research among the university community, sponsors and higher education stakeholders (Fenwick, 2012). Fenwick (2012) urged the university research communities and external supporters to educate decision-makers and stakeholders on the requirements and the value of university research in serving society.

Taylor and other's studies have generated analytical and empirical data about specific strategies and practices regarding enhancing university research. Nevertheless, some limitations are detected in the Taylor's and other foregoing studies. Some of these studies were small in scale. For example, Deem and Lucas

(2007) focused only on education departments. Others such as Edgar and Geare (2013), Fenwick (2012) and Taylor (2006), despite being comprehensive and international – involving a bigger sample of countries and universities – mainly employed the interview method during data collection. Despite being a popular method, the interview, like all methods of data collection, is prone to a number of limitations. Whilst the interview normally examines the human world of beliefs and meanings, these are not necessarily actions. Interviews tend to capture participants' statements rather than their actions, and the participants' claims or supposed knowledge and feelings do not necessarily correspond with their actions (Tight, 2012).

Therefore, there is no guarantee that the interviewees of the foregoing studies did not exaggerate their statements in order to advance a positive image of their universities. After all, the findings and assertions were based on the subjective feelings and opinions of these individual interviewees, whose credibility may be difficult to ascertain. Interviews in these studies could have been supplemented by the documentary review method, which might have included analysis of national higher education policies and institutional strategic documents of the universities under study. The documentary review in these studies could have helped to ascertain whether what the participants claimed to think, experience or do matched with their actions. The documentary review could have also helped to ascertain whether these universities were required by the national education policy or law to engage in research, or if they engaged in research just for pleasure or for entrepreneurial purposes. Engaging in research for the sake of policy compliance or for painting a positive image and marketing of the university may indicate a different status of an institutional research culture.

Although some of these studies employed observation and documentary review (e.g., Deem & Lucas, 2007), they mainly reviewed institutional strategic documents and avoided the national strategic and policy documents, which could have established a larger collective picture of research initiatives at both the institutional and national level. In addition, Taylor (2006) and other studies discussed thus far were conducted in the Western world and in well-established research-intensive universities. Aspiring research-intensive universities in the non-Western world, in general, appear to have been left out of this picture.

In addressing the gap of how national higher education policies and strategies enable the country to support research initiatives in universities, Leathwood and Read (2012) analysed the government's research policy and interviewed academics of various universities across Britain. The findings show that members of academic staff were aware of key research policy trends, and that there were significant levels of misgivings regarding many aspects of the research assessment exercise (RAE) policy. In particular, Leathwood and Read's (2012) study expressed concerns over the selective nature of the RAE policy (currently REF). The policy was found to favour well-established universities and members of academic staff as well as certain types of research projects. It undermined small-scale universities and research projects such as qualitative, feminist and critical research.

Although Leathwood and Read's (2012) study established how the UK government's RAE policy supports and enforces research in universities, it has some limitations as well. The study left a number of areas unexplored, which the authors partly attributed to the limited timeframe. These include the influence of university leaders and management strategies on cultivating research cultures and an examination of how national research policy is enacted and interpreted or resisted in universities (Leathwood & Read, 2012). Leathwood and Read's (2012) study was also conducted in the Western world and covered both research-intensive and aspiring research-intensive universities. According to Taylor (2006), the two kinds of universities – research-intensive and aspiring research-intensive, do not share similar characteristics, and a significant overlap may occur when they are combined in a single study. This implies that research characteristics and initiatives in aspiring research-intensive universities remain uncharted territory.

A study by Hazelkorn (2005) addresses the gap of developing research in aspiring research-intensive universities observed in previous studies. She conducted a mixed-method study involving 25 universities across 17 OECD countries. The findings show that the HEIs under study had identified the need to enhance university research through the establishment of graduate schools and research offices, the formation of research groups and research collaborations and setting institutional research priorities and strategic plans that reflect national priorities

and donors' criteria. The study by Hazelkorn (2005) also found some obstacles that inhibited institutional research success, which include poor resource base and selective government policies that favoured established higher education institutions.

Despite being a comprehensive international study, Hazelkorn's (2005) study is not without limitations. As in the case of some previous studies discussed in this section, this study did not use documentary review, which is crucial in studies of this nature in order to establish the credibility of the findings gathered through other data collection methods, such as the self-completed questionnaire and focus group discussion as used in her study. Another limitation is based on the generalisability of the study's findings to other parts of the world as the study was predominantly conducted in OECD countries. Thus, it remained largely unknown how higher education institutions in non-OECD or developing countries develop a research culture.

Studies by Kian-Woon *et al*. (2010), Lodhi (2012) and Nguyen (2016) add to the knowledge gap left by the foregoing empirical studies on the initiatives of developing university research in developing countries. In a mixed-method study conducted in Pakistani public universities, Lodhi (2012) found the existence of a more teaching-supportive culture than research-supportive, despite how the universities under study aspired to become research-intensive and linked academic staff promotion to research. Similar findings were echoed in a study conducted within 15 Cambodian universities by Kian-Woon *et al*. (2010), which found that most of Cambodian universities functioned predominantly as teaching institutions, coupled with the absence of a clear-cut national and institutional research policy to support and promote research.

Kian-Woon *et al*. (2010) also established several challenges to developing university research such as research unsupportive career tracks, low staff salaries, brain-drain, limited number of well-trained researchers, inadequate research resources and limited government funding as many research projects conducted were funded by donors. These findings are also supported by Nguyen's (2016) study, which examined the strategies used to promote university research within Vietnam.

Representing the context of developing countries, in addition to the foregoing Asian based studies, Emiru (2012), Dessie and Mesfin (2013) and Cloete and Bunting (2013) are authors of some of the African studies undertaken to investigate strategies and practices used to develop university research in Africa. One South African study found that all the five universities under review had well-developed research policies and practices that were broadly clustered into "development, support and incentives" (Cloete & Bunting, 2013, p.5). Development dealt with the provision of further training on research such as doctoral level studies and professional development courses. Support dealt with the establishment of viable policies and structures to support research undertaking. Likewise, incentives dealt with the provision of pecuniary and other forms of incentives to expedite undertaking of research.

Contrasting findings were reported by two Ethiopian studies which found a lack of enabling infrastructure to facilitate research initiatives such as viable research policies, adequate research funding, mentoring programmes, language barrier, heavy administrative and teaching workload and limited internet access (Emiru, 2012; Dessie & Mesfin, 2013). The absence of clear research policies in Ethiopian universities as reported in these studies resulted in undertaking research mainly for obtaining academic credentials, rather than for solving pressing problems within the society (Emiru, 2012; Dessie & Mesfin, 2013).

Despite their notable empirical and analytical contributions regarding the development of university research particularly from the African context, some reservations can be made in relation to the studies by Cloete and Bunting (2013), Dessie and Mesfin (2013) and Emiru (2012). Firstly, they were small-scale studies, for example, Dessie and Mesfin's (2013) and Emiru's (2012) studies focused respectively on one university. Secondly, they overlooked examining the national higher education policy and how this policy influenced research in the universities under study. Thus, it is difficult to link the challenges faced at the institutional level, such as "there is no system that makes research work mandatory for academics in the university" (Dessie & Mesfin, 2013, p.69), to policy laxity at the national level. It is also possible that the policy enforcement gap could just be institutional.

Even large-scale studies such as Cloete and Bunting's (2013) were not as detailed as to render their findings generalisable to other universities in other African countries, due to the different operational context and other socio-economic and cultural factors. In this regard, to get a broader perspective, similar information on how the sub-Saharan Africa's universities develop a research culture is needed from other countries of sub-Saharan Africa. Tanzania is one case in point that so far has lacked any empirical study of the issue.

Table 3-1 Key Points from the Analysis of Empirical Studies

Author(s)	Study context	Major focus	Key points
Deem & Lucas (2007) Leathwood & Read (2012)	United Kingdom (UK)	• National and institutional policy directions	• Staff competence and confidence • Academic freedom and autonomy • Recognition and motivation • Time for undertaking research • Financial resources • Physical resources • Research-active mentors • Steadiness of university mission and purpose • Staff development • Strong support for research dissemination and application • Familiarity with national and institutional research policies • Graduate schools • Selective and unclear government policies • Research unsupportive career tracks • Low staff salaries • Brain-drain • Limited number of well-trained researchers • Inadequate research resources • English language barrier • Heavy teaching workload • Limited Internet access
Mullen *et al.* (2008) Fenwick (2012)	United States (US)	• Factors necessary for, and approaches to building a research culture	
Taylor (2006)	UK, US, Canada and Australia		
Edgar & Geare (2013)	New Zealand		
Hazelkorn (2005)	17 OECD countries		
Kian-Woon *et al.* (2010)	Cambodia		
Lodhi (2012)	Pakistan		
Nguyen (2016)	Vietnam		
Emiru (2012) Dessie & Mesfin (2013)	Ethiopia	• Obstacles to building research cultures in universities	
Cloete & Bunting (2013)	South Africa		

By and large, the review of empirical studies in this section demonstrates that the area of research culture within higher education is an emerging field of study, but is currently becoming an increasingly high priority for many countries (Evans, 2007; Cloete *et al.*, 2015; Nguyen, 2016). Notwithstanding the emerging character of this topic, there are still some shortcomings in the previous studies undertaken in this area. Some of these studies were small-scale despite using mixed method approaches. Specifically, these studies (e.g., Deem & Lucas, 2007; Emiru, 2012; Dessie & Mesfin, 2013; Cloete & Bunting, 2013) were undertaken at the institutional level, as they overlooked analysing the national

higher education policy, which is crucial to explaining the reasons for the prevailing strong or weak research culture within the university. The large-scale studies, on the other hand, mainly employed the interview method (e.g., Hazelkorn, 2005; Taylor, 2006; Fenwick, 2012; Edgar & Geare, 2013), and were primarily based in well-established research universities within the Western world. Thus, a similarly comprehensive picture for aspiring research-intensive universities in the non-Western world remained largely absent.

It is imperative to study a diverse group of countries in order to generate a global perspective on the development of a research culture in higher education system (Ridley, 2011; Jung, 2012; Nguyen, 2016). Indeed, different countries have different levels of social, cultural and economic development which prompts them to employ different policies, approaches and resources to educational provision. As such, when compared with the extensive body of studies that exist on the topic in Western literature, there is a scarcity of studies regarding sub-Saharan Africa, particularly in Tanzania. From the available literature, this is the first study to be conducted in Tanzania. In light of this, the following section (3.8) describes the conceptual framework guiding the study.

3.8 Conceptual framework guiding the study

Given the need for an abstract demonstration of how key concepts and constructs of the present study interact in actual settings, the study employs a conceptual framework. Metcalfe (2008) introduced a framework for analysing research in higher education, which consists of four elements: mission, support, management and translation. Mission refers to the directions and conditions necessary for research development at the institutional, national and regional level. This involves understanding university research not only as an academic activity but also as part and parcel of national innovation systems and industrial competitiveness. Support involves funding and creating necessary infrastructures for bolstering the undertaking of research that encompasses both the academic mission and national development. Management involves the supervision of research and resources, for example, research evaluation and personnel recruitment and promotion, ethical issues and mediating conflict of interests and intellectual property issues. Finally, translation involves the dissemination or transfer of the research output or knowledge from the university setting to

the community and industries, wherein the knowledge created can be put into practice.

Although Metcalfe's (2008) typology provides an informative framework for understanding what research entails within higher education, as well as inputs and practices to consider and invest in order to develop university research, it does not provide an analytical tool that view all four elements as interrelated, and each element is informed by the output of others to create a coherent framework. The evaluative nature of the present study, which investigated how the higher education sector within Tanzania is developing a research culture, demanded the adoption of a framework capable of guiding evaluation or assessment of personnel, institutions, programmes, projects and products.

Accordingly, Daniel Stufflebeam (1971)'s CIPP (Context, Input, Process and Product) model of evaluation was deemed appropriate; hence, it was adopted to guide this study. A synthesis of the conceptual underpinnings and constructs presented within this CIPP framework in this section is informed by the review of both the theoretical and empirical literature presented in the previous sections of this chapter (*cf.,* Table 3.1, p.84) and chapter 2. This implies that the present study has mainly adopted the structure of the CIPP as developed by Daniel Stufflebeam.

CIPP was first used in 1966 to evaluate federally funded projects in the United States, and since then has been widely used to evaluate a number of projects and programmes in various disciplines (Stufflebeam & Shinkfield, 2007). It is also popular within education and has been used over five decades to guide evaluation of comprehensive educational programmes and projects, for example, related to educational research and development, school improvement, science and mathematics education, rural education and professional development schools. With this CIPP evaluation, Stufflebeam and other researchers used multiple methods to collect data including interviews, observations, case studies, document analysis and synthesis to produce a final report. These methods of data collection are similar to the ones used in the present study (see Chapter 4).

Hodge and Jones (1999) used the CIPP model to examine how the waiver policy deregulate and improve public education within 67 school districts of Florida, United States. The study found that the waiver policy facilitated school reforms by assuring adequate planning, assessment and evaluation. The study concluded that a need exists for using government/state policies and procedures that assures comprehensive evaluation practices. As the use of CIPP model was relevant to Hodge and Jones' (1999) study concerning the impact of waiver policy on education, so it is to the present study because the study sought to analyse the influence of Tanzania's higher education policy context on developing a research culture.

Another study by Huang (2001) employed the CIPP model to explore the effectiveness of the chemical engineering curriculum at a recent established engineering college in Taiwan. The study sourced data from employers, teachers and graduates using a questionnaire that measured respondents' perceptions of the curriculum's core and elective courses. The study found that the courses were of high quality and they did provide chemical engineering graduates with the skills, professional attitudes, abilities, self-confidence and humanistic qualities they needed. As the CIPP model was a good fit to Huang's (2001) study about perception of educational stakeholders (students, teachers and employers) towards the chemical engineering curriculum offered by a selected university college in Taiwan, so as to the present study's focus which also sought to determine the perspectives of higher education stakeholders regarding measures and approaches to be used to improve the research capacity within Tanzanian universities, which have registered a low-level research capacity as compared with other universities abroad and within sub-Saharan Africa (see Chapter 1 and 5).

The CIPP model was also used to evaluate the Computer Studies programme at Higher Diploma level in Hong Kong's City University (Wong, 2002). The evaluation focused on ascertaining the effectiveness of the programme in meeting the identified industry needs and requirements. The study found that the programme was still in great demand within Hong Kong and it was producing the right and relevant kind of graduates for the job market. The study suggested the programme should not be positioned as a capstone qualification, rather a

bridging programme towards a degree level qualification. Likewise, Umit (2004) evaluated the Turkish Language Teaching Programme for Foreigners at Minsk State Linguistic University in Belarus using the CIPP model. The findings showed that the Turkish Language Programme partially met the needs and demands of the leaners involved. The CIPP model was also employed in Taiwan to guide the construction of national educational indicators (Chien *et al.,* 2007), and in Nigeria to assess the trainability of first-year students in the Leventis Foundation Agricultural Schools (Osokoya & Adekunle, 2007).

Similarly, Zhang *et al*. (2011) adopted the CIPP model to assess the Service-Learning Programmes (SLP) at a public university in the United States. Furthermore, applying the CIPP model, Ghazali's (2015) research was conducted to investigate the implementation of the School-Based Assessment (SBA) system in Malaysian primary and secondary schools. The study found that the implementation of the SBA was at an early stage in Malaysia as compared with other Asian countries. For the SBA to operate successfully and win the hearts and minds of educational stakeholders and the community members, schools needed to establish a clear understanding of the standards required to be applied to the SBA. Generally, the broad application of the CIPP model in a number of studies and projects, affirms that it is a comprehensive framework that can guide the evaluation of programmes, projects, personnel, products and institutions in both educational and non-educational settings.

Although the CIPP model is broadly used and has been shown to have countless advantages over other frameworks, it has certain limitations. The CIPP model assumes that the most effective choices and decisions are those based on the best feedback or information obtained from various stages of the model (see Figure 3.1, p.94). Therefore, this best information or feedback needs to get to the stakeholders involved, particularly decision makers on the right time, which poses some challenges in real operational settings (Subah, 1986; Ghazali, 2015). Thus, the best information is often of no use if it is not provided on time to base a decision on it. Another limitation rests on the flexibility of the model in obtaining feedback. The CIPP model allows for feedback to be obtained during the interaction process (formative assessment) and at the end of the interaction (summative assessment) to inform choices and decision-making process (see

Figure 3.1, p.94). Critics argue that it is difficult to specify decisions to be attended before the interaction or evaluation is completed, as the alternatives and choices established at the outset of an evaluation process may only be tentative (Subah, 1986; Ghazali, 2015).

Despite some limitations, the CIPP model is applauded to be practitioner-centric and it is useful for both formative and summative evaluations (Ghazali, 2015). As such, it enables decision-makers or researchers to track the accountability of a programme from its inception, conduct on-going appraisal at a developmental stage and assess programme outcomes. Given that the present study investigated policy and practical initiatives to developing university research, which is not a one-off process, the CIPP model is deemed appropriate to guide the study. It is important to note that there is no perfect or best model, one has to consider the plausibility and practicality of the selected model or framework in guiding the conduct of the study, as well as the discussion and interpretation of the findings.

The CIPP model consists of four interrelated phases: Context, Input, Process and Product. Each phase informs the output of other phases to form a logical framework as indicated by arrows in Figure 3.1 (p.94). The model envisages interaction among all the four phases since they are all inter-dependent. In this sense, one phase affects the outcome of the next stage. The context prepares what is projected to occur in the input, and the input prepares what will happen in the process and the process determines the product or outcome.

The Context: Context evaluations assess the needs, opportunities, problems and assets to guide decision-makers, define goals and priorities and help users to judge priorities, aims and outcomes (Stufflebeam, 2000). In the present study, context consists of variables such as supranational policies, national higher education policy, country's political context, national higher education budget, national research and development policy, prescribed mission of universities, guidelines for career structure and assessment of academic staff performance and promotion, university prospectuses, university's vision and mission, university research policy and strategic plans.

Assessment of these context variables helps to establish the extent to which Tanzania's higher education sector is committed to developing a research culture. With such knowledge, different educational stakeholders can be informed of what to do (e.g., kind of support or inputs to provide), in efforts aimed at promoting a successful research culture in Tanzania's HEIs. Puplampu (2012) notes that the analysis of the supranational, national and institutional strategic and research policies is a necessary initial step to the development of a successful research culture within higher education.

The Input: Input evaluations assess the feasibility of plans, approaches and strategies to meet the target needs and accomplish desired goals (Stufflebeam, 2000). In the present study, the input consists of variables such as workable supervisory and administrative systems, an adequate number of qualified and committed academics devoted to teaching and research, quality students, sufficient scholarly resources and sustained funding mechanisms to support research activities. Other variables include research supportive career tracks, a strong professional development programme, a good incentive system, research-active mentors and peers and intellectual freedom.

Assessment of these input variables helps to provide information about the strengths and weaknesses of policies and strategies planned and chosen in the context phase and implemented in the process phase. For example, a well-defined system of career tracks for academic staff, as one of the variables in this input phase, necessitated the inclusion of research criterion in assessing academic staff performance for promotion and tenure in the process phase, as well as making it a policy guideline in the context phase. Empirical studies indicate that variables such as feasible supervisory and administrative systems of HEIs and academics, an adequate number of qualified and committed academics, quality students, sufficient scholarly resources, sustained research funding, research-active mentors and a strong professional development programme are necessary inputs or requirements in building and strengthening research capacities in universities (see Table 3.1, p.84).

The Process: Process evaluations assess the implementation of plans and strategies that later help to explain outcomes. It is a continuing exercise of checking and recording changes, key omissions and inclusions and providing

feedback on well and poorly executed plans and initiatives (Stufflebeam, 2000). In this study, the process consists of variables such as workable and feasible procedures that include research criterion when registering and accrediting universities, sustained funding of research activities, systematic monitoring of research in career structure and assessment of academic staff, systematic monitoring of individual academic's research behaviour, and rewarding productive and outstanding researchers.

Other variables include punitive measures against researchers who are unproductive, sustainable staff development programme (e.g., postgraduate training, seminars and workshops), modest teaching commitments that avail time for research, collegial research environment, delivery of research-led teaching and learning, properly established research dissemination mechanisms, and mutual collaboration among the university, government and the community and/or industry.

An assessment of such variables helps to provide information on the strengths and weaknesses of chosen strategies and injected inputs, and identified some implementation successes and difficulties. For instance, it is commonly and widely acknowledged in literature that several practices such as allotting modest teaching commitments, encouraging research collegiality and research-led teaching, funding of research activities, and incentivising productive researchers, stimulate academic staff members to engage in research and strengthen institutional research culture (*cf.*, Fenwick, 2012; Quimbo & Sulabo, 2013; Trotter *et al.*, 2014; Nguyen, 2016).

The Product: Product evaluations identify and record the intended and unintended, positive and negative, as well as short and long-term outcomes, to help guide and direct the project or programme and determine its effectiveness (Stufflebeam, 2000). As stated earlier in this section, the product is impacted by other elements (context, input and the process). The product, in turn, impacts the other elements, depending on the resultant type of outcome. In this study, the product refers to outcomes such as a pervasive research culture across the university community, pervasiveness of research-led teaching, and a research-intensive university that can contribute significantly to the knowledge-based economies. Other outcomes include a responsive university system to the

societal needs, a strong university-industry link for knowledge valorisation, increased university prestige and increased professional capital for academics.

Further outcomes include competent and innovative graduates who can contribute to socio-economic development, improved quality and quantity of teaching and learning infrastructures (e.g., books, journal articles, hand-outs, ICT, software and equipment), and constant availability of relevant knowledge for successful quality teaching and research. Increased academic and institutional research productivity or output (e.g., books, journal articles, software and chemicals), and attainment of educational goals are also the outcomes envisaged from the product evaluation.

All of these outcomes are determined by the context, the input and the process used in developing a research culture within Tanzania's higher education sector. As stated elsewhere in this product phase, the CIPP model is flexible to accommodate unexpected outcomes as well by looking at several contextual or environmental factors and indicators. For example, the research-based career development policies for academic staff may lead to diminish academic staff members' attitude and commitment to teaching as the case in some universities in developed countries Cloete *et al.*, 2015; Shin & Lee, 2015; Ghazali, 2015). Thus, product evaluation generates information for determining positive and negative outcomes. As such, it informs decision-makers and researchers of the resources, initiatives, energy and approaches that have been employed to attain these outcomes should be sustained, adjusted or terminated.

3.9 Summary and conclusions

This chapter has reviewed both the theoretical and empirical literature around the development of a research culture in higher education in order to discuss strategies that are used to develop research in universities and establish the knowledge gap that warrants further investigation. From this literature review, the chapter has placed the study's topic in its context, revealed the knowledge gap and indicated how the present study could fill this knowledge gap. The chapter has also clarified the research questions that were formulated, a theoretical and conceptual framework to guide the study and the research design to be adopted. As with the review of literature in Chapter 2, the

literature review in this chapter has also created the foundation for reference, discussion and interpretation of the findings presented in the subsequent chapters. The following Chapter 4 presents the research design and methodology employed in this study.

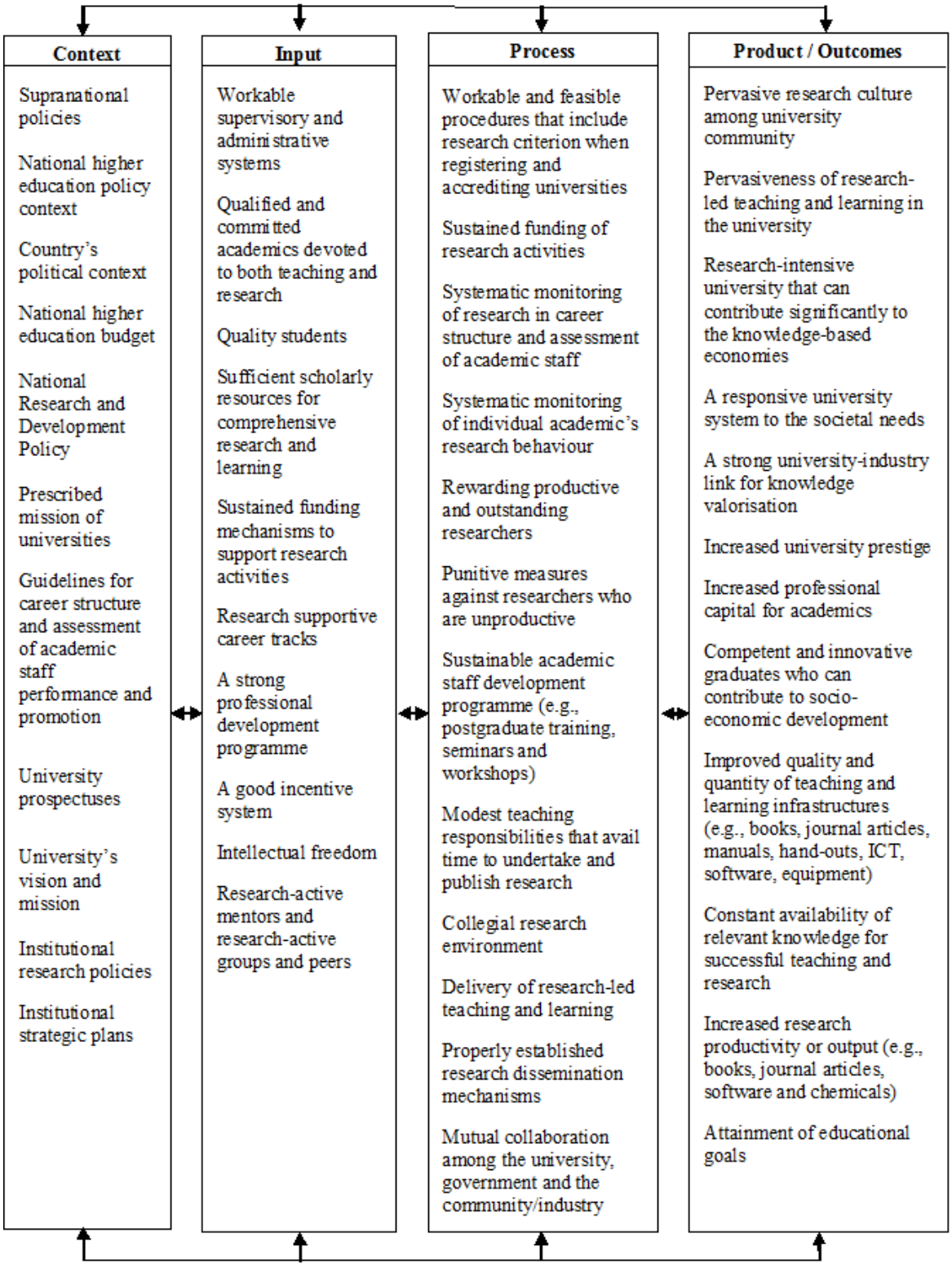

Figure 3-1 Conceptual Framework Guiding the Study

Source: Adapted from Stufflebeam (1971)

4 Research Design and Methodology

4.1 Introduction

This chapter presents the research design and methodology employed to facilitate the collection and analysis of data in this study. The chapter is divided into nine sections. Following this introduction, section 4.2 revisits the study's aim and research questions. Section 4.3 presents the philosophical underpinnings of the study, followed by a description of the research approach and design in section 4.4. The study's sample and sampling techniques are presented in section 4.5. Data collection methods and analysis procedures are explained in section 4.6, followed by the steps taken to ensure trustworthiness and ethical standards in section 4.7. Moreover, section 4.8 addresses the researcher's position, and section 4.9 summarises and concludes the chapter.

The presentation of the research design and methodology in this chapter is primarily organised around Michael Crotty's (1998) four basic questions for developing a research methodology framework, which include:

1. What methods does the researcher propose to use?

2. What methodology governs the choice and use of methods?

3. What theoretical perspective lies behind the methodology in question? And,

4. What epistemology informs the proposed theoretical perspective? (Crotty, 1998, p.2).

Methods, according to Crotty (1998), refer to techniques or procedures used to collect and analyse data connected to a given study's research questions or hypotheses. Crotty defines methodology as the plan of action, design or strategy behind the specific methods' choice and use. Theoretical perspective refers to the philosophical position underpinning the methodology and, thus, providing a setting for the process and creating a foundation for its logic and criteria. Finally, Crotty defines epistemology as the theory of knowledge rooted in the theoretical perspective and thus the methodology.

Crotty (1998) further argues that a researcher at the outset adopts a specific stance or epistemology towards the nature of knowledge (e.g., subjectivism or objectivism). This stance governs the whole research process and underpins the selection of a particular theoretical perspective (e.g., interpretivism or positivism). This theoretical perspective is implicit in research hypotheses or questions, and guides the investigator's choice of methodology (e.g., ethnography or grounded theory). Lastly, this methodology informs the researcher's choice of research methods (e.g., interviews or questionnaires).

It is important to note that there are many publications on research methods such as Gary Thomas' (2009) *How to Do Your Research Project*, John Creswell's (2009) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches,* and Robert Yin's (2011) *Qualitative Research from Start to Finish*. The researcher selected Crotty's research methodology framework to design and organise the empirical investigation in the present study, because it provides a comprehensive guide towards making relevant decisions concerning the overall planning and designing of research.

4.2 Aim and research questions

Academics, educational stakeholders and policy makers both at the national and international level agree that research is a central purpose of higher education, as it enhances the provision of quality research-led education and facilitates the socio-economic growth of an institution and a nation. As such, research has captured policy makers' attention and also constitutes a primary activity for universities (Leathwood & Read, 2013; Nguyen, 2016). Although universities have been generally engaged in research, some universities, particularly those found in the developing world, are lagging far behind. In consequence, higher education researchers (e.g., Altbach, 2013; Shin, 2013; Harle, 2013; Nguyen, 2016) have constantly urged universities to develop research, particularly those with a low culture of research.

The review of relevant literature presented in Chapter 3 indicates that the area of research culture in higher education is an emerging academic area of study and under-studied, as a number of shortcomings exist in the prior relevant studies. Some studies are just prescriptive (*cf.*, Lewis & Simmons, 2010; Ridley,

2011; Altbach, 2013; Asikhia, 2013; Gerard *et al.*, 2013), and empirically based studies are primarily small-scale despite some of them using mixed methods approaches. The large-scale empirical studies largely used the interview method and were typically based in well-established research-intensive universities in the Western world (e.g., Hazelkorn, 2005; Taylor, 2006; Fenwick, 2012; Edgar & Geare, 2013). A similar comprehensive picture grounded in empirical evidence from universities in the non-Western world is missing.

Given the fact that there exists a significant gap of social and economic development between the developed and the developing world, it is deemed crucial to understand the development of a research culture from a diverse set of universities and nations (Gonzalez-Brambila & Veloso, 2007; Ridley, 2011; Nguyen, 2016; Teferra, 2016). Notably, Africa remains under-represented in terms of such studies carried out thus far. Therefore, this study investigated approaches which the higher education sector in Tanzania is currently employing to develop a research culture. The study is the first of its kind to be undertaken in Tanzania, and it has sought to answer the following four research questions:

1. How does the national higher education policy context influence the development of a research culture?

2. In what ways do higher education institutions develop a research culture?

3. What challenges do higher education institutions face in developing a research culture?

4. What does the Tanzanian higher education sector need to do to foster a prosperous research culture?

4.3 Philosophical underpinnings of the study

The starting point for any empirical study, as discussed previously, lies in the philosophical position that underpins the kind of knowledge required for answering the research questions and later choices of methodology and methods of data collection. This section presents the ontology, epistemology and theoretical stance that guided the present study.

4.3.1 Ontology and epistemology

Ontology, which is a starting point for all research is concerned with what human beings believe constitutes reality. There are two popular ontological positions: foundationalism, which is based on the view that reality exists independent of human knowledge, and anti-foundationalism, which is based on the view that reality is socially constructed and, hence, dependent on a particular time, context or culture (*cf.*, Grix, 2002; Bryman, 2012). Although Crotty (1998) omits ontology from the research process, he conjoins it with epistemology, as he believes the two are mutually dependent and pose difficulties to their conceptual differentiation in the research process. In this regard, Crotty outlines: "to talk about the construction of meaning [referring to epistemology] is to talk of the construction of a meaningful reality [referring to ontology]" (Crotty, 1998, p.10). This implies that it is hard to disconnect existence from what it is believed existence entails.

Conversely, Grix (2002) argues that despite the two concepts being closely related, it is rational to separate them because research begins from one's view of reality, which is shaped by the experience a person carries in the research process. Subscribing to Grix's (2002) suggestion, the present study adopted the anti-foundationalism ontological position, as the researcher believes that reality is socially constructed and is in a state of flux because of revision (Bryman, 2012).

Epistemology, on the other hand, has to do with the way of comprehending and explaining how one knows what s/he knows (Grix, 2002). The literature identified the following popular epistemologies: objectivism, subjectivism and social constructivism (Crotty, 1998; Bryman, 2012). Objectivism views reality as independent of human consciousness, and only research that is conducted objectively can attain such independent truth and meaning. Social constructivism views reality as socially constructed and holds that it cannot be obtained independently from human consciousness and experience. In other words, any meaningful reality is dependent upon human practices and is inevitably formed out of the individuals' interaction with their social reality. Under subjectivism, this meaningful reality is imposed by the subject on the

object, and it solely depends on the subjectivity of the researcher on the phenomenon under study.

This study opted to deploy social constructivism as its epistemological stance, primarily because it emphasises the fact that knowledge emerges out of an individual's experience when interacting with its environment. In fact, social constructivism permits closer interaction between the researcher and the participants or informants during fieldwork. In such interactions, informants can describe the world (reality) from their perspective and this enables the researcher to better comprehend the informants' actions (McMillan & Schumacher, 2006; Thomas, 2009). This orientation is relevant to the present study that sets out to analyse higher education policy and collect views from different higher education stakeholders on the current practices and way forward in developing a research culture within Tanzania's higher education system.

4.3.2 Theoretical perspectives

There are a number of theoretical perspectives that any researcher can use to design his/her methodology. These include interpretivism, feminism and positivism. Positivism posits that the behavioural patterns of human beings are the same as those of matter, such that it is likely to obtain hard and objective knowledge from these humans, because knowledge is objective and can be collected by measuring and observing the behavioural patterns (Thomas, 2009; Bryman, 2012). Interpretivism contends that reality and human knowledge are social products, and thus, cannot be provided independently of the social actors who participated in making that reality (Crotty, 1998). Human beings are unlike matter that can be lured to respond mechanically to external stimuli. Instead, human beings are sentient beings capable of thinking and feeling, which can react to a stimulus, interpreting it before making an appropriate move. On the other hand, the feminist perspective theorises regarding the influence of gender on human interactions and societal practices. Feminist researchers examine oppression created by men, and are conscious of the existing inequalities under patriarchy, choosing to focus on leveling the playing grounds through changing the culture of the society (Crotty, 1998).

From the theoretical perspectives discussed thus far, the interpretivist perspective was adopted as a guide as it augurs well with the anti-foundationalism ontological position and social constructivism epistemology adopted in this study. For interpretivists, reality is multi-layered and a shared social experience that can change across time and place, and that cannot be objectively constructed, because the researcher's and the participant's values are always present in a given study (Thomas, 2009).

There are two fundamental ways that interpretivists can reliably approach research to which the present study also subscribed (McMillan & Schumacher, 2006; Thomas, 2009). Firstly, they study human beings in their natural settings. Secondly, they use data collection methods such as interviews, observations and documentary review that allow for the revelation of meaning behind the participant's actions. As such, this study involved human participants who interacted with the researcher in their respective institutions/offices through interviews and focus group discussions (see section 4.6).

4.4 Methodological choice for the study

4.4.1 Research approach

The study employed a qualitative research approach. Akin to the tenets of the interpretivist philosophy adopted in the present study, qualitative research is "a form of social enquiry that focuses on the way people interpret and make sense of their experience and the world in which they live" (Holloway & Wheeler, 2002, p.30). Qualitative research involves in-depth investigation of human behaviours in their natural settings and motives that govern those behaviours. In this study, the qualitative research approach granted the researcher an opportunity to visit universities and headquarters of the Ministry of Education and the Tanzania Commission for Universities, the overseer of higher education in Tanzania. It also granted the researcher the opportunity to interact with the higher education sector-related informants, whose experiences, practices and perspectives on the ways in which Tanzania's higher education sector is developing a research culture and how the country can improve the research capacity in its universities were invaluable.

4.4.2 Research design

The study employed a case study design. The case study design involves an in-depth investigation of a given contemporary phenomenon using multiple sources (Cohen *et al.,* 2007; Yin, 2009). The case study design was employed in the present study for a number of reasons. It has a distinctive characteristic above other research designs when "how" or "why" questions are asked in a study, and when the researcher's control of the events is impossible (Yin, 2009). Thus, the case study was deemed relevant to the present study to identify how the higher education sector in Tanzania influences the development of a research culture, and how the country can improve the research capacity in its universities. The case study was also chosen because it enables the researcher to use triangulation or multiple sources of data to answer the research questions. The use of triangulation fosters data authentication, therefore making the resulting findings or conclusions more reliable. Forms of triangulation that this study used include data source triangulation, methodological triangulation and multiple settings or site triangulation (see section 4.7).

A case study design can either be of a single case study or multiple case studies. This study adopted a multiple-case study design (see Table 4.3, p.109) because the evidence provided from multiple cases is considered more rich and reliable than in a single case (Yin, 2009). In his book, *Multiple Case Study Analysis*, Stake, 2005) emphasises that:

> Each case to be studied is a complex entity located in its own situation. It has its specific contexts or backgrounds. Historical context is almost always of interest, but so are cultural and physical contexts. Others that are often of interest are the social, economic, political, ethical, and aesthetic contexts. The program or phenomenon operates in many different situations. One purpose of a multicase study is to illuminate some of these many contexts, especially the problematic ones. (Stake, 2005, p.12)

In this regard, a multiple case study in this study enabled the researcher to compare and contrast the similarities and differences of the studied phenomenon within each site and across sites.

In addition, a multiple-case study, as the literature also suggests, is a vehicle for fostering analytical or theoretical generalisation of qualitative data, unlike to

sampling generalisation, typically found in quantitative studies (Baxter & Jack, 2008; Yin, 2009, 2011). Both literal replication and theoretical replication occur when sites selected can support the prediction of similar results and contrasting results respectively. The site-cases selected for the present study (see section 4.4.3) have characteristics that allowed the researcher to gather data for both literal and theoretical replications.

4.4.3 Area of the study

The study was conducted in Tanzania, a nation that is found in East Africa (see Chapter 1, for details on the background information about Tanzania). Within Tanzania, the study was conducted in six research sites, namely the Ministry of Education headquarters, the Tanzania Commission for Universities (TCU)' headquarters and four universities. To observe ethical issues in reporting the findings (see section 4.7), the four universities are anonymised. The Ministry of Education and the Commission of Universities have been mentioned in this Methodology chapter because they are the overseers of the higher education sector in the country, however, when reporting the data, they are also anonymised (see chapter 5). Therefore, in the reporting of the findings, the six research sites involved in this study are coded as RS1, RS2, RS3, RS4, RS5, and RS6 whereby RS stands for Research Site.

On the other hand, four sets of criteria were used to select the four universities: accreditation status, age of institution, geographical location and ownership. Details of the selection criteria are presented in the subsequent subsections.

4.4.3.1 Ownership

As with other levels of education, both public and private sectors participate in the provision of higher education in Tanzania. Therefore, there are universities that are state-owned or public universities and others are private-owned or private universities. The key characteristic that differentiates public from private universities in Tanzania is funding and management. The government of Tanzania funds public universities and the civil servants manage these institutions. Conversely, owners of private universities manage and finance private universities. Currently, Tanzania has 11 public and 17 private universities

(TCU, 2014). Since this study sought to get in-depth insights and full understanding of how Tanzania's higher education sector is developing a research culture, both public and private universities were included in the study.

4.4.3.2 Accreditation status

There are two stages in the university accreditation in Tanzania: Provisional Licence (PL) and Certificate of Accreditation (CoA). PL constitutes the first stage of university accreditation *en route* to becoming a fully functioning university. CoA is the second and final stage granted after a university has fulfilled all requirements necessary to operate as a fully-fledged university entity. By 2014, six of 11 public universities and four of 17 private universities were accredited at the CoA stage (see Table 4.1, p.104) (TCU, 2014). Although many universities were long established, the process of accreditation involving the two stages only began in 1998, after the establishment of a harmonised higher education body called the Higher Education Accreditation Council (currently known as the Tanzania Commission for Universities [TCU]).

This study focused on accredited universities because these institutions were considered well-placed to provide valuable information about the development of a research culture in Tanzania's higher education sector. In fact, these institutions provided information regarding the criteria used for university accreditation, the place of research in the stages of university accreditation, and the terms and conditions of service for the accredited universities.

4.4.3.3 Age of institution

With regard to the nature of the present study's research questions and research design, it would not have been possible to study all Tanzanian accredited universities because that could be beyond the scope of this study – as explained previously in this section (4.4) and section 1.8 of Chapter 1. For that reason, the age of institution criterion based on year of accreditation was factored in. Although there are long-established universities other than those in the CoA stage, the primary concern of this study was to focus on the accredited institutions, because of the mandate and obligations that go with accreditation. In light of this, the study included four universities that were longer accredited

than others. The older accredited universities are more established institutions and hence able to attain accreditation status earlier than others.

4.4.3.4 Geographical location

Even though Tanzania has 30 regions (provinces), many universities and accredited universities, in particular, are concentrated in Dar es Salaam. Dar es Salaam is the commercial and administrative city of Tanzania where all ministries, including the Ministry of Education, are located despite the more centrally located Dodoma holding the nation's official capital status. Table 4.1 shows that Dar es Salaam only has five universities of the 10 accredited universities. However, to ensure representativeness and geographical diversity, the present study included universities from other regions. Thus, the study involved four universities from four different regions of Tanzania.

Table 4-1 Accredited Universities in Tanzania

S/N	Institution	Ownership	Location	Date of Accreditation	No. of Students	Academic workforce
1.	University of Dar es Salaam	Public	Dar es Salaam	2006	20311	1156
2.	Mzumbe University	Public	Morogoro	2007	7884	288
3.	Open University of Tanzania	Public	Dar es Salaam	2006	51521	348
4.	Ardhi University	Public	Dar es Salaam	2006	3408	139
5.	Sokoine University of Agriculture	Public	Morogoro	2007	7228	503
6.	Muhimbili University of Health and Allied Sciences	Public	Dar es Salaam	2007	3165	238
7.	Hubert Kairuki Memorial University	Private	Dar es Salaam	2000	480	46
8.	Saint Augustine University of Tanzania	Private	Mwanza	2002	12776	245
9.	Tumaini University Makumira	Private	Arusha	2002	7000	62
10.	University of Iringa	Private	Iringa	2005	3798	32

Source: TCU (2014, pp.1-10), URT (2013)

4.5 Participants, sample and sampling techniques

4.5.1 Participants of the study

Participants involved in this study included the senior education officers and policy makers – Director of Higher Education and Senior Accreditation Officers – who were sourced from the Ministry of Education and the Tanzania Commission for Universities. At the university level, the participants included Deputy Vice-Chancellors (Academic) and (Research), Directors of Research and Publications, Faculty Deans, Academic staff members and Postgraduate Students. These participants were involved in the study because of their key leadership roles within Tanzanian universities, and as the key implementers of the national higher education policy in the country (see Table 4.2, p.106). Table 4.2 (p.106) provides a description of each category of the participants, including reasons for their inclusion in the study and information generated from them during fieldwork.

4.5.2 Sample size and sampling techniques

The topic of sample and sampling has often been a contentious issue in qualitative studies. One viewpoint opposes the very idea of having a sample in qualitative studies, whereas the opposing viewpoint embraces the idea. Before proceeding, therefore, there is a need to clarify the bone of contention that has kept this debate going.

Hornby (2006) defines a sample as "a number of people or things taken from a larger group and used in tests to provide information about the group" (p.1293). Similarly, The American Heritage College Dictionary (1993, p.1206) defines a sample as "a portion, piece, or segment that is representative of a whole." These definitions show that a sample is a subset but with all characteristics of the population it represents.

Opponents of using a sample in qualitative studies insist that the idea of sample is "a misnomer" in qualitative research, since the claim to representativeness of the whole population (Thomas, 2009, p.101) does not in essence apply to qualitative research which does not make generalisations regarding the findings part of its primary agenda.

Table 4-2 Participants of the Study

Category of participant	Participant function	Reason for inclusion	Information shared
Director(s) of Higher Education (DHOs)	Mandated with formulation, monitoring and evaluation of national higher education policy	By virtue of their administrative positions as key formulators and overseers of national higher education policy	• Conceptions, goals and functions of universities in Tanzania • Governance of universities and career structure of university academics in Tanzania • Financing of research in Tanzanian universities (see Appendix A)
Senior Accreditation Officers (SAOs)	Responsible for accreditation and regulation of universities	By virtue of their administrative positions as SAOs at national level	• Criteria used for university accreditation in Tanzania • Terms and Conditions of service for the accredited universities (see Appendix B)
Deputy-Vice Chancellors (Academic) (DVC-Ac) & DVC-Research	Assisting the Vice-Chancellor in the day to day academic and research matters of the university	By virtue of their administrative positions as the DVCs based on academic and research matters	• Research productivity of universities • Source and modality of university research funding • Place of research in academic staff assessment and promotion • Critical factors and approaches to developing a research culture (see Appendix C)
Directors of Research and Publications (DRPs)	Coordinate research, publication and consultancy services at universities	By virtue of their administrative positions as the Directors of Research, Publication and Consultancy Services	• Research productivity of universities • Types of research conducted at universities (e.g., donor-driven or university-initiated) • Universities' human resource capacity for research, teaching and community service • Research related support, academic staff receive from their institutions • Critical factors and approaches to developing a research culture (see Appendix D)
Faculty Deans	Articulate and oversee university policy and procedures to academic staff members within the Faculty	By virtue of their administrative positions as the heads of Faculty	• Faculties' human resource capacity for research, teaching and community service • Types of research conducted at Faculty (e.g., donor-driven, university-initiated, faculty-initiated) • Place of research in academic staff assessment and promotion • Critical factors and approaches to developing a research culture (see Appendix E)
Academic staff	Key recipients and implementers of national higher education policy at the university level	Professional qualification as the key implementers of the national higher education policy at the university	• Research productivity and sources of fund for the research conducted • Critical factors and approaches to developing a research culture • Challenges facing Tanzanian HEIs and academics regarding undertaking research (see Appendix F)
Postgraduate students	Key recipients and direct beneficiaries of higher education	Academic maturity and higher education experience	• Challenges facing Tanzanian HEIs and academics relating to developing a research culture • Critical factors and approaches to developing a research culture (see Appendix G)

As qualitative researchers usually strive to make sense of the meaning from the collected data, the concept of generalisation should be disallowed in qualitative research, particularly concerning research that studies people and meaning in their lives (Thomas, 2009). The rationale behind this argument is that each population under study has its own peculiarities, hence rendering generalisations invalid (Thomas, 2009). As such, the anti-sample viewpoint insists that, instead of a sample, the term "population" should be used, and the researcher should study the whole targeted population. It becomes harder for the findings to bring about insights and nuances of the overall target population once the research population is sampled.

Conversely, proponents of using a sample in qualitative research argue that qualitative researchers naturally tend to focus on key participants selected from the overall research population, that allow for generalisations to the population they represent. In their journal article, whose earlier version received the 2004 Southwest Educational Research Association (SERA) Outstanding Paper Award, Onwuegbuzie and Leech (2007, p.107), contend that:

> While it is true that in many situations qualitative researchers are not interested in generalising findings beyond the people they directly study, we contend that in virtually every qualitative study nearly always makes generalisation from the words of key informants to the voice of the other sample members, and from the words of sample members to those of one or more individuals not selected for the study; or from the observations of sample members to the experience of one or more individuals not selected for the study.

It is evident that sample and sampling should be considered in qualitative studies. For practical purposes, studying the whole target population is only feasible when one's proposed study population is as small as one, which rarely happens. Thus, qualitative studies often focus on a small sample of key participants picked from the general target population. These key participants often produce a chunk of the researcher's primary information. The extent of generalisability of the information from the key participants depends on two things: the selected key participants must be representative of the target participants not selected, and the sample of words when reporting the findings must represent each key participant's voice (Onwuegbuzie & Leech, 2007). In this respect, both individuals (key participants) and their words are the sampling

units in a given qualitative study. As such, Maxwell (1996) and Bryman (2012) insist on qualitative researchers to select the key participants randomly from the set of the target population to ensure that the key participant words are representative of those of the target population not selected.

The resistance to the use of the sample in qualitative research is connected to the use of probability sampling techniques, which are by design typically more suited to quantitative rather than qualitative studies. Opponents of the use of the sample in qualitative research, sometimes even without considering the circumstances of one's study objectives, questions and study elements, tend to discourage qualitative researchers from using probability sampling, as they fear it could undermine the qualitative studies' outcome. Excluding probability sampling on the basis of it being unsuitability for qualitative research, without taking into account of mitigating factors, can be detrimental to the very research being undertaken. As a result, sample sizes in many qualitative studies are often haphazardly selected, with little or no justification provided to substantiate the sampling procedures used (Onwuegbuzie & Leech, 2007).

Qualitative researchers have to come to terms that sometimes probability sampling techniques are essential in qualitative research as well and deploy them accordingly. As Bryman (2012, p.416) asserts:

> Probability sampling may be used in qualitative research, though it is more likely to occur in interview-based rather than in ethnographic qualitative studies. There is no obvious rule of [the] thumb that might be used to help the qualitative researcher in deciding when it might be appropriate to employ probability sampling, but [the following criterion] might be envisaged. If the research questions do not suggest that particular categories of people (or whatever the unit of analysis is) should be sampled, there may be a case for sampling randomly.

Therefore, the sample and sampling section should not appear odd in qualitative studies. If a qualitative study, depending on its research objectives and questions, demands that probability sampling techniques be employed, it is prudent to do so. It is against this backdrop that the present study, despite being qualitative in nature, has included a section on sample and sampling techniques and deployed some of the probability sampling as well.

4.5.2.1 Sample size

The study drew a sample of 79 participants. The sample of 79 was considered convenient and adequate in this qualitative study because the study, as similar to several other qualitative studies, sought to provide an in-depth understanding of the problem under study, rather than simply generalising the data collected (Cohen *et al.*, 2007; Yin, 2011). The insights resulting from the qualitative investigation are primarily dependent on the information robustness of the site(s) studied and the researcher's analytical capabilities of the findings, rather than on the sample size (McMillan & Schumacher, 2006; Onwuegbuzie & Leech, 2007; Bryman, 2012).

Table 4.3 indicates the composition and characteristics of the study's sample. Except for cases where the researcher did not have control such as the administrative positions, gender parity and settings in the sample representation was considered in this study. The following subsection (4.5.2.2) demonstrates the sampling techniques used to arrive at the sampled numbers in each category of the study's participants.

Table 4-3 Composition and Characteristics of the Study Sample

Participant category	Institutions/ Office and Participant Number & Gender														
	RS1		RS2		RS3		RS4		RS5		RS6		Total		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	T
Assistant and/or Director of Higher Education	1	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Senior Accreditation Officers	-	-	2	1	-	-	-	-	-	-	-	-	2	1	3
Deputy Vice-Chancellors	-	-	-	-	1	-	-	-	-	-	1	-	2	-	2
Directors of Research and Publications	-	-	-	-	1	-	1	-	-	-	-	1	2	1	3
Faculty/School Deans	-	-	-	-	2	1	3	-	4	-	3	-	12	1	13
Academic Staff	-	-	-	-	3	4	3	2	2	2	2	2	10	10	20
Postgraduate Students	-	-	-	-	6	7	5	4	4	3	4	4	19	18	37
Total	1		2	1	13	12	12	6	10	5	10	7	48	31	79
Grand Total	1		3		25		18		15		17		79		

Key: RS= Research Site M= Male F= Female

4.5.2.2 Sampling techniques

The research methods literature tends to group sampling techniques based on either quantitative or qualitative research, which resulted in two major sampling techniques: probability sampling – associated with quantitative studies and non-probability sampling – associated with qualitative studies (Cohen *et al.,* 2007; Onwuegbuzie & Leech, 2007; Thomas, 2009; Yin, 2011). Probability sampling whose common types include simple random, stratified random, systematic random and cluster random sampling, provides an equal opportunity for all individuals in the target population to be selected. Conversely, non-probability sampling provides an unequal chance of selection of individuals in the target population. The most common types of non-probability sampling include convenience sampling, quota sampling, dimensional sampling, purposive sampling and snowball sampling. To offset the weaknesses inherent in one sampling technique, so as to increase the more possibility of generating robust findings, the present study made use of both probability (stratified random sampling) and non-probability (purposive) sampling methods.

Purposive sampling in this study was used to select research sites and some categories of participants in the target population. Four universities were purposively sampled based on the accreditation status, age of institution, geographical location and ownership (see section 4.4). Purposive sampling was also used to pick two institutions outside of the university setting, as these institutions oversee and regulate higher education and universities in Tanzania. At the individual level, purposive sampling was used to select one Assistant Director of Higher Education, three Senior Accreditation Officers and two Deputy Vice-Chancellors. Other participants selected through purposive sampling were three Directors of Research and Publications and 13 Faculty Deans. These participants were purposively selected because of the strategic administrative positions they hold in the selected research sites.

Stratified sampling was employed to obtain a sample that was representative of the target population from a group of academic staff members and postgraduate students. Stratified sampling mandates for individuals to be initially grouped into homogeneous groups of different characteristics such as gender or age, and then, selected at random from the final heterogeneous list (Cohen *et al.,* 2007).

Accordingly, the researcher grouped members of academic staff into Faculty or College, educational level and gender. In each university under study, three to four Faculties or Colleges were included in the study, representing both natural sciences and social sciences. The category of educational level consisted of members of academic staff with a doctorate and those with a Master's degree, while the gender category comprised male and female groups. The researcher then selected at random the final list which consisted of 20 members of academic staff (8 doctorates and 12 Masters), with an equivalent representation of the Faculties or Colleges and gender. Postgraduate students were also grouped into the Faculty or College, gender and education degree one was pursuing – doctorate or Master's degree. The final list of postgraduate students resulted in 37 participants (12 at the doctoral level and 25 at the Master level), with an equivalent representation of the Faculty or College and gender.

4.6 Data collection methods and analysis procedures

4.6.1 Data collection methods

This qualitative-multiple case study was informed by an interpretivist philosophy, whose central concern is to understand human experiences at a holistic level (see section 4.3). The nature of this kind of research often requires data collection methods that frequently strive to capture informants' words and actions, such as observations, interviews, group discussions and documentary review (Ary *et al.,* 2010). Accordingly, this study adopted three methods of data collection: interviews, focus group discussions and documentary review.

4.6.1.1 Interviews

Interviews were used in the present study as they often collect data through verbal and non-verbal interactions, such that it helped the researcher to place informant behaviour in context and interpret actions and choices (Cohen *et al.,* 2007; Ary *et al.,* 2010; Yin, 2011). The ways in which Tanzania's higher education sector develops a research culture and factors for building a successful research culture may be best generated by asking relevant individuals, as dialogue has become the most common powerful method of accessing an individual's mental processes, disclosing the meaning of their experiences, and understanding the world from their perspective (Cohen *et al.,*

2007; Ary *et al.,* 2010). Moreover, interviews can collect data that is unavailable in performance records or documents, and data that can prove difficult to be collected through written responses or observations (Kvale & Brinkmann, 2009).

Interviews are typically divided into three types: structured, semi-structured and unstructured (Gillham, 2005; Cohen *et al.,* 2007). Structured interviews are equated to verbally administered questionnaires that have little room for flexibility. Thus, they are rendered unsuitable if sufficient depth of detail is required. Unstructured interviews are usually conducted with little or no organisation; as a result, they often consume time and can be difficult to manage. Semi-structured interviews can be planned and have a greater degree of flexibility that allows the researcher to change the order or clarify the interview questions and responses. Therefore, the study employed semi-structured interviews, which were conducted face-to-face. Semi-structured interviews constitute a key instrument for research that intends to gather robust and in-depth information (Gillham, 2005).

Semi-structured interviews in this study were conducted with the Assistant Director of Higher Education (see Appendix A), Senior Accreditation Officers (see Appendix B), Deputy Vice Chancellors-Academic and Deputy Vice Chancellor-Research (see Appendix C), Directors of Research and Publications (see Appendix D), Faculty Deans (See Appendix E) and Academic staff members (see Appendix F). A total of 42 interviews were conducted, and all the interview sessions were conducted in the university setting and the individual's respective offices for the participants drawn outside of the university setting. These settings were considered convenient by both the researcher and participants to produce fruitful data. Prior to interview sessions, participants were assured of confidentiality (see section 4.7). Each interview session lasted for 20 to 40 minutes. With the interviewees' consent, the interview sessions were audiotaped to supplement the manual note-taking. The recorded interviews were then transcribed, as doing so safeguards against bias and affords a record of generated data.

Although interviews are a useful method of data collection, they have some weaknesses as well. The interpersonal relationship between the interviewer and the interviewee existing during the interview may result in bias (Cohen *et al.,*

2007). This bias may in turn decrease the trustworthiness and reliability of data. These weaknesses were lessened by the careful construction of questions to attain clarity, and the use of triangulation. The researcher used multiple methods of data collection, multiple study sites and multiple sources of data – documents and persons.

4.6.1.2 Focus group discussions (FGDs)

Research problems similar to the present study, which strive to explore processes ("how" and "why" questions), approaches and factors ("what" questions), are more amenable to be settled through discussion and social interaction (Cohen *et al.,* 2007; Bryman, 2012). The added dimension of interactivity among the participants, makes FGDs one of the best methods for generating qualitative data, as participants are encouraged to communicate and critique one another's experiences, something which fuels practices of critical thinking and discussion. FGDs in this study were conducted with postgraduate students (see Appendix G). Six FGDs that comprise five to eight participants were held. All of the FGD sessions took place within the university environment, which was a familiar location for the participants, in turn helping the FGD participants to relax, resulting in more fruitful discussions.

Before commencing an FGD session, participants were informed of the purpose of the research and the FGD in particular, and of the ground rules for the discussion. Some of the ground rules explained included how each participant has an equal right to participate in the discussion, observing confidentiality of different matters raised during discussion beyond the FGDs' room, and tolerating both the positives and negatives of other participants' arguments. The researcher also explained that participation in the FGDs was voluntary, and that there would be no repercussions for anyone who declined to participate or leave in the middle of the discussion. Fortunately, no participant left in the middle of the FGDs. Participants were also told that no names or any identifying features would be included in the report or subsequent publications. The FGDs lasted for 40 minutes and with the participants' consent, the FGDs were audiotaped to supplement the short notes taken by the researcher.

One weakness of FGDs is that the presence of other research participants may compromise the confidentiality of the information generated during the FGD session (Cohen *et al.,* 2007). The researcher adhered to and continually reminded the FGD participants of the ground rules explained earlier in this section. An additional weakness of the FGDs is that the data collected from this method cannot be generalised. However, generalisation is not the primary agenda of FGDs (Thomas, 2009); albeit generalisation was not an overriding concern in the present study because, as with other many qualitative studies, it sought to provide in-depth insights towards understanding the problem under study, rather than simply generalise the data collected. The FGDs in this study, worked to supplement and triangulate interview and documentary review methods of data collection.

4.6.1.3 Documentary review

Documentary review involves examining and evaluating documents both in print and electronic format to generate meaning, gain greater understanding and advance the knowledge of human behaviour, events and actions from the past to the present (Bowen, 2009). The documentary review method in this study was generally led by the study's four major research questions, as outlined earlier. The process began with the search of documents in the websites of the institutions under review and physical access to the institutions' offices during fieldwork. The documents were then read to evaluate and interpret their meaning.

In general, the study analysed the following documents: the Tanzania Higher Education Policy, the National Research and Development Policy, the national budget for higher education, university prospectuses, directives and circulars, institutional research policies, university research and publication reports, and guidelines for the assessment of academic staff performance and promotion (see Appendix H). Some documents were requested from the institutions under study and other documents such as the Tanzania Higher Education Policy, university prospectuses and university research policies were accessed from the respective institutions' websites. Appendix H indicates the type of documents which were analysed, institutions where documents were requested and accessed and also the sort of information sought and analysed from those documents.

Numerous justifications have been advanced for using documentary review method of data collection in a research study (*cf.*, Bowen, 2009, pp.29-31; Yanow, 2007, p.411), including facilitating the gathering of the study's background information, identifies additional research questions and situations and corroborates findings from other methods and data sources. In brief, the documentary review method can either serve as a complement to other data collection methods or as a stand-alone method. The documentary review in this study was useful in three ways. Firstly, it helped to generate historical and educational insights regarding the context in which the study was conducted; for example, Tanzania's education system and structure and genesis of higher education in Tanzania (see Chapter 1 and 5). Such information helped the reader understand the study's context and the context in which the study's participants operate. It also helped the researcher understand the historical origins of specific issues and situations that impinge upon the development of research in the African higher education system.

Secondly, the documentary review determined and illuminated issues of attention that warrant empirical investigation. The method, for example, helped to generate interview questions on the topic around the conception, goals and functions of universities in Tanzania, criteria used for university accreditation, career structure and assessment criteria of academic staff as well as sources and modalities of university research funding. Thirdly, the documentary review was used to validate findings from other methods (interviews and FGDs) and data sources in order to achieve the triangulation of research tools, minimise bias and foster the credibility of the study's findings.

4.6.2 Data management and analysis procedures

4.6.2.1 Data management

Data reported in this study were collected through semi-structured interviews, focus group discussions and documentary review as presented in subsection 4.6.1. Both interviews and FGDs were audiotaped and these audio recordings were transferred into a password encrypted personal computer. The audio data were then transcribed verbatim to get textual data similar to manual-taken field notes collected through documentary review, interviews and FGDs. All the

transcribed data and the manual-taken field notes were stored and locked in the office cabinet to which only the researcher had access (see section 4.7).

4.6.2.2 Data analysis procedures

As with many other qualitative-based data analysis, thematic analysis guided data analysis in this study. Thematic analysis involves examining and classifying qualitative textual-formatted data according to patterns or themes, as well as making sense of the evolving thematic structures by looking for similarities, differences, relationships, central patterns, theoretical and analytical constructs or principles (Braun & Clarke, 2006; Creswell, 2009). Researchers from all disciplines and research methods or paradigms such as case study, qualitative, education and humanities, widely use thematic analysis as an analytical approach to data analysis. This is because of thematic analysis being powerful in handling a large chunk of data to generate robust interpretations while preserving the original context (Braun & Clarke, 2006; Creswell, 2009).

Thematic analysis in this study involves six major stages: familiarisation with data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report (Braun & Clarke, 2006, p.87). Although presented in stages, data analysis in the present study was not a linear process, but rather a recursive one, which involved moving and returning to the analysis throughout the various stages.

The first stage, *familiarisation with data*, involves reading and re-reading the data and making a note of any initial ideas. Familiarisation with the data began during data collection as all the interviews, FGDs and documentary reviews were conducted by the researcher. For expedited and insightful data analysis, Braun and Clarke (2006) generally recommend that researchers collect data themselves and also participate in transcribing the data. Apart from the solo collection of data, the researcher in this study also transcribed the audio data himself as another preliminary step in grasping of and familiarising with the data. The researcher then read and re-read the manual-taken field notes and the interview and group discussion transcripts in their entirety numerous times.

The second stage, *generating initial codes*, involves writing short descriptions for chunks of data. The researcher noted short concepts and ideas emerged from the texts in the paper margins. The third stage, *searching for themes*, involves collating codes and relevant data into potential themes. The researcher sifted through the data, highlighted and arranged out pertinent quotations and linked them to potential themes. The fourth stage, *reviewing themes*, involves checking the relationship among the themes, the codes and the entire data set. The researcher sorted again the statements and quotations from their original context under the newly generated themes.

In the fifth stage, *defining and naming themes*, the researcher defined and refined the particulars of each theme relating them to the complete story the analysis described. In the sixth stage, *producing the report*, the researcher selected vivid, captivating extracts, and then these captivating extracts were related back to the research questions, conceptual and theoretical framework and the literature reviewed. Finally, this report was written and produced.

It is essential to note that although there is computer software that facilitates the analysis of qualitative data such as ATLAS. Ti, MAXQDA, NVivo and NUD*IST, the researcher did not employ any during data analysis. The decision for opting out was due to the general agreed fact that computer software can reduce some physical tasks in the data analysis process, but, the human element (e.g., thinking) remains the primary factor (Bazeley, 2007; Thomas, 2009). In fact, the manual coding provided the researcher with a deeper understanding of the data and it laid the solid foundation for the insightful discussion and interpretation of the findings that followed.

4.7 Trustworthiness and ethical issues

4.7.1 Trustworthiness of the findings

There has been an ongoing discussion with regard to the terminology used when researchers want to describe how they ensure the credibility of their qualitative studies. The discussion centres on which terminologies are appropriate in qualitative research – ‘validity’ and ‘reliability’ as largely employed in a quantitative study, or ‘trustworthiness’ which many tend to associate with a

qualitative study. Some leading qualitative researchers insist that the philosophical underpinnings of quantitative and qualitative research are incompatible and, thus, the concepts of validity and reliability are inadmissible in qualitative studies (Stenbacka, 2001; Morse *et al.,* 2002; Cohen *et al.,* 2007; Bryman, 2012). In consequence, Guba and Lincoln (1985) substituted the terms reliability and validity with 'trustworthiness'.

However, some researchers are uncomfortable with the use of 'trustworthiness' in qualitative studies, as they still prefer to use the terminology of 'validity' and 'reliability', cautioning that determining validity and reliability in qualitative research differs from quantitative research. The overriding argument is that the validity and reliability concepts can be applied in all kinds of research, as all research undertakings have one central goal of establishing plausible and credible findings (Yin, 2009). In qualitative research, validity means checking for the accuracy of the findings by employing identifiable procedures involving the researcher, the participant or the readers of the account. Reliability in qualitative research, on the other hand, refers to a degree of accuracy and robustness of coverage, loyalty to real life context as well as honesty, peculiarity and meaningfulness to the participants (Cohen *et. al.,* 2007; Ryan *et al.,* 2007). In other words, reliability in qualitative research can be regarded as a match between what researchers' record and report as empirical data and what truly happens in the natural setting under study.

If these qualitative researchers agree that the parameters for establishing validity and reliability differ from those applicable to quantitative research, why then are they reluctant to adopt Guba and Lincoln's (1985) terminology specifically designed for qualitative research? The researcher in the present study, on his part, has no qualms about the usage of the term 'trustworthiness' in qualitative studies, and hence has made use of it in this study. In this regard, the following strategies were used to ensure the trustworthiness of the findings in this study.

4.7.1.1 Triangulation

Triangulation is accomplished by asking the same research questions to diverse study participants, gathering data from multiple sources and using a variety of

methods to answer those research questions. As a result, triangulation is divided mainly into three types: multiple-methods (methodical) triangulation, multiple-sources (data-source) triangulation and multiple settings (site) triangulation (Cohen *et. al.,* 2007; Ryan *et al.,* 2007; Bryman, 2012). Under the methodical triangulation, data were collected using more than one method: face-to-face interviews, focus group discussions and documentary review (see section 4.6). The use of different data collection methods in this study helped to compensate for the individual limitations of particular data collection methods and exploit their individual benefits.

Data-source triangulation in this study, involved collecting data from more than one data source or the use of a wide range of participants. Apart from using documents as one of its sources of data, the study involved different categories of participants including senior officers from the Ministry of Education and the Tanzania Commission for Universities, senior university leaders, academic staff members and postgraduate students (see Table 4.2, p.106). Here, individual perspectives and experiences were corroborated by others and eventually, a rich data set was generated based on the diverse participants' contributions. Finally, site triangulation was realised in this study by involving participants from six research sites (see section 4.4). In this way, findings that were generated from different sites, could produce greater credibility in the reader's eyes.

4.7.1.2 Thick description

Thick description, as described by Guba and Lincoln (1985), involves a description of a phenomenon under study in sufficient detail to allow the conclusions drawn from the study be transferable to other settings and situations. The researcher has described in detail all stages of the present study's design, including explicit clarifications of the study context and the problem statement, methodology, data collection, presentation and interpretation processes. During data presentation, the researcher has carefully described and analysed data by including a set of participants' evidence through quotations and explanations, as well as the context in which the participants' words were articulated. Such in-depth treatment enables the reader to properly understand and validate the instances and events described in this study with those experienced in their situations. The thick description of all stages of data

collection, analysis and interpretation also enables the reader to judge whether or not proper research practices in this study were observed.

4.7.1.3 Consented participation

Each participant was asked for his or her consent to participate in the study. This was done purposely to ensure that the study follows proper research standards and that the data collection process involves only those participants who are genuinely willing to participate and ready to offer information freely. In the letter of invitation (see Appendix I) and all opening moments of interactions, the researcher explained to participants that the present study was conducted for academic purposes and that one has the right to withdraw from the study at any point if one wished, without any fear of reprisal. Participants were also assured that personal names or identifying features would not appear anywhere in the study report or other publications related to the study (see subsection 4.7.1).

4.7.1.4 Member checks

The researcher asked the participants involved in the study to go through transcripts of discussions in which they had participated. This process was aimed at verifying whether the participants consider that their words resembled what they had actually intended. This procedure enabled the participants to look back on their experiences and to reduce the misconception of their self-reported views and behaviours. It was also a golden opportunity for the researcher to ask for clarifications on inconsistencies and ambiguities emerged in the transcripts.

4.7.2 Ethical considerations

Qualitative research involves numerous ethical issues, due to the intensive personal contacts between the researcher and the participants (Yin, 2011). The researcher is obliged to prevent the participants involved in the study from being subjected to any harm, be it physical, social or psychological, which might be caused by their participation in the study or after publishing the findings (Cohen *et al.*, 2007). Though this study did not provide circumstances in which the participants could come to any harm; nevertheless, the researcher adhered

to the following ethical issues to ensure research etiquette were diligently followed:

4.7.2.1 Research protocol observation

The researcher sought permission to conduct this study from relevant authorities. The researcher submitted a comprehensive request for the authorisation of the ethical committee, at the College of Social Science Research Ethics Committee of the University of Glasgow (see Appendix K), which is a prevalent standard for many research and educational institutions (Cohen *et al.*, 2007). The plain language statement was attached to the ethical application form (see Appendix I), showing procedures for data management and storage and assurances of the protection of study's participants from harm. The informed consent document was also attached to the ethical application (see Appendix J), promising the safety of the participants through guaranteeing that they would not risk their lives by participating in this study.

The researcher also obtained a research clearance in Tanzania, where the study was conducted. In Tanzania, higher education institutions are mandated to provide research clearance for their staff and students. The researcher is a member of staff in one of the Tanzania's higher education institutions, which was not one of the study sites. The research clearance obtained from the University of Glasgow and Tanzania (see Appendices K and L) enabled the researcher to access the individual research sites for further authorisation to conduct the study. Permission to access the research sites, nonetheless, was not a warrant for the researcher to access the participants. A special letter of invitation accompanied with the ethical approval documents was used to invite the study's participants and assure their confidence to participate.

4.7.2.2 Informed consent

Informed consent in the present study was achieved by making participants aware of the purpose of the study, type and uses of the information being sought and the implications of their participation (Ryan *et al.,* 2007; Cohen *et al.*, 2007; Kvale & Brinkmann, 2009). The researcher explained to participants the amount of time required for participation, methods and devices used for data

collection, use of the data and issues of confidentiality as participants were promised that the study's report or subsequent publications will not disclose their personal identity. The foregoing explanations were openly issued prior to data collection using both verbal and written accounts, as the researcher provided the plain language statement that describes the study (see Appendix I) and the informed consent that guarantees the safety of the participants (see Appendix J). Participants were not forced nor were they provided with any incentive to consent their participation in this study.

4.7.2.3 Confidentiality and anonymity

Prior to all interviews, the researcher requested the participants to consent for the conversation to be audiotaped; no conversations were clandestinely audiotaped. Participants were assured that the information provided would remain confidential and would be used for research purposes only. The study involves six research sites; however, for the sake of anonymity in the reporting of the findings, the six research sites are coded as RS1, RS2, RS3, RS4, RS5, and RS6 whereby RS stands for Research Site. Moreover, the researcher has regrouped the seven categories of participants into six: Higher Education Officers, Deputy Vice-Chancellors, Directors of Research and Publications, Faculty Deans, Academic Staff and Postgraduate Students. Higher Education Officers stand for Assistant Director of Higher Education and Senior Accreditation Officers. However, there is no change in the status for Deputy Vice-Chancellors, Directors of Research and Publications, Faculty Deans, Academic Staff and Postgraduate Students in the presentation of the findings. The reason for such a decision is based on the fact that the categories of Deputy Vice-Chancellors (Academic and Research), Directors of Research and Publications, Faculty Deans, Academic Staff and Postgraduate Students contained many participants and all research sites were given codes.

4.8 Position of a researcher in the study

Researchers in qualitative studies are often constructed as research instruments, due to their position in relation to the phenomenon being investigated and a close interaction with the study's participants (Creswell, 2009; Thomas, 2009), which may endanger the reliability of the resulting findings. Consequently, the

researcher can be either an insider – sharing the common experience, characteristics and knowledge under study with the study's participants – or an outsider to common experience and knowledge shared by the participants (Cohen *et al.*, 2007; Creswell, 2009; Dwyer & Buckle, 2009). As such, it is vital for the researcher in this study to disclose his position in the phenomenon under investigation and explain potential advantages and disadvantages associated with this position in the research process and how that could impact the interpretation of the study's findings. In the present study, the researcher is an insider, as he happens to work as an academic staff in one of the higher education institutions in Tanzania, which was not one of the study sites. In this respect, the researcher investigated a topic in which he was not only the researcher but could also be one of the participants.

Literature has established some advantages of an insider position in the research process, which include easy access to participants due to familiarity, ability to enquire more insightful questions due to possession of background knowledge, ability to collect authentic and thick data due to an understanding of the culture, language and non-verbal cues and ability to gain more trust and honest answers (Dwyer & Buckle, 2009; Bourke, 2014). However, the position of a researcher simultaneously being an insider has disadvantages as well, which can undermine the credibility of the findings. This is because the researcher's values, perceptions and beliefs may be clouded by his personal experience, and that as a group member the researcher can have difficulty discriminating it from that of the participants. Researcher's familiarity with the participants' culture and knowledge can also make research participants less willing to disclose sensitive information that they would probably reveal to an outsider researcher whom they think as a stranger and they will have no future meeting or contact with (Creswell, 2009; Thomas, 2009; Bourke, 2014). Indeed, research participants may assume that the insider researcher knows more than they do, and that there is no need of providing detailed information about the phenomenon under study.

The researcher in this study faced a number of opportunities and challenges regarding access, rapport, honesty and trust, as a result of being an insider. During fieldwork, the researcher had difficulty in accessing some senior

university leaders and higher education officers at national level. In some cases, lack of availability was explained as being due to a busy schedule.

Moreover, the researcher also had difficulty in accessing information regarding funding of research activities/projects in the universities under review. Most of the participants' responses were general and they did not disclose specific amount of funding remitted to research activities. The researcher also was not granted an opportunity to access ledger books/documents regarding funding research activities. This raises questions to the issue of trust to the researcher, who was an insider in this study. Research questions that ask about funding issues are considered sensitive, and office holders' informants often think a researcher as an 'auditor' in which their candid responses may put their positions/jobs on the line (Creswell, 2009; Thomas, 2009; Bourke, 2014). Ultimately, to ensure the data collected is rich and reliable, the researcher mitigated this limitation by involving other participants and sources of data (a triangulation strategy see Chapter 4).

Although some challenges were experienced during fieldwork which can be associated with an insider positionality; being an insider was, to a greater extent, an asset to the researcher in this study. Sharing similar experience with those of the participants enhanced the understanding of complex phenomena such as research and higher education development in Tanzania and sub-Saharan Africa in general. Thus, the researcher entered the fieldwork as a professional and determined to act professionally (bracketing biases and prejudices) despite being an insider. Again, the professional experiences the researcher possessed of higher education was used to guard against any unreasonable and illogical claims made by participants. Another benefit of being an insider in this study was acceptance by colleagues, something that facilitated access to academic staff participants and provided a common ground on which to begin research that might otherwise be problematic to an outsider (Dwyer & Buckle, 2009). Knowing the researcher as an academic staff member, academic staff under study were open to the researcher and shared their experiences openly, that in turn enabled the researcher to gather in-depth and reliable data.

4.9 Summary and conclusions

Based largely on Michael Crotty's (1998) four basic questions for designing a research methodology, this chapter has presented the research design and methodology employed in the present study, which sought to find answers to the central question: how is the higher education sector in Tanzania developing a research culture? Philosophically, the study adopted an anti-foundationalism ontology and a social constructivism epistemology, informed by an interpretivist philosophical stance. Methodologically, the study employed a qualitative-multiple case study which was conducted in four universities in Tanzania. Four sets of criteria were used to select the four universities: accreditation status, age of institution, geographical location and ownership.

A sample of 79 individuals, made up of senior higher education officers, senior university leaders, academic staff members and postgraduate students, was selected through purposive and stratified sampling. Data were collected through face-to-face interviews, FGDs and documentary review. Thematic analysis, based on Braun and Clarke's (2006) six major phases, was selected as a method to guide the data analysis. The present chapter has also clarified how the trustworthiness of data was ensured. In particular, it mentions the use of triangulation, consented participation, member checks as well as confidentiality and anonymity. The chapter has also described the use of a detailed description of the study's context, design and report writing process helped to validate and enhance the credibility of the study.

The chapter has also explained how the study observed ethical issues including seeking permission to conduct the study from relevant authorities – the University of Glasgow, the government of Tanzania, research sites and individual participants through a letter of invitation. Moreover, the study has used coding in reporting the findings, particularly quotations from the participants, to ensure that personal identifiers are not used in the report.

The chapter concludes that, although there is a myriad of competing methodological options in planning and designing an empirical study, their distinction does not mean that there are some methodological choices that are more useful than others. Rather, they all hold their own strengths in different

areas of research. In this regard, the choices of the research design and methodology opted in this study were particularly relevant to the nature and overall purpose of the study as well as the study's research questions. Data collected as a result of this research design are presented in the following chapters, beginning with Chapter 5, which focuses on the influence of Tanzanian higher education policy on the development of a research culture.

5 Policy Directions for Developing a Research Culture in Tanzania

5.1 Introduction

Findings and discussions pertaining to the first research question, among the four primary research questions that have guided the study, are presented in this chapter. It is worth noting that the present study is generally a descriptive broad-based study reporting on the current organisational context, the purpose of which is to set a baseline for a programme of organisational change by identifying policy initiatives, challenges and possible approaches and strategies necessary to build a research culture. As such, this chapter presents the findings and discussions regarding the influence of Tanzanian higher education policy context on the development of a research culture. For clarity, the presentation of the findings in the chapter precedes the discussion and interpretation.

The chapter is divided into seven sections. This introduction is followed by the rationale underlying the examination of Tanzania's higher education policy (HEP) in section 5.2. Section 5.3 describes the procedures used to examine Tanzania's HEP, followed by a profile of the country's higher education in section 5.4. Key findings that emerge from the analysis of Tanzania's HEP are presented and discussed in sections 5.5 and 5.6 respectively. Finally, section 5.7 summarises and concludes the chapter.

5.2 Concept of policy and the rationale behind policy analysis

A plethora of policy definitions have been put forward over the past years (Mwaikokesya, 2014). This indicates that the term "policy" remains a contested one. However, the present study adopts the conception of policy that focuses on public policy. A public policy is a purposive course of actions intended to guide and direct the government's decisions and initiatives in managing overriding public concerns; for example, the problems citizens face, and the use of public funding to solve them (Marzotto *et al.*, 2000; Dye, 2005). The present study applies this definition because it relates public policies to goal-oriented

endeavours designed to solve an overriding problem rather than make unsystematic attempts.

This definition also suggests that a public policy is normative, as it describes both the ends and means aimed at influencing people's behaviour and actions, as well as guiding institutions and professionals in a specified direction (Rizvi & Lingard, 2010; Mwaikokesya, 2014). The purposive course of actions in public policy is often manifested in public declarations, laws, formal regulations and publicly observable government actions and behaviour (Marzotto *et al.,* 2000). As such, this study has reviewed and analysed a list of higher education policy documents and official government statements and regulations as well as a full range of apparatus used to enact policy including governance, funding, management structures and university mission (see Appendix J), in order to ascertain the extent to which research is valued and how it is being developed in Tanzania's higher education sector.

The examination of Tanzania's HEP in this study was motivated by policies having implications for nearly everything that happens on the ground (Dye, 2005; Rizvi & Lingard, 2010; Mwaikokesya, 2014). Policies represent official declarations, intentions and the course of actions, whose examination is likely to illuminate the significance attached to university academic core functions, one of which is research (*cf.,* Leathwood & Read, 2012; Cloete & Bunting, 2013). Furthermore, the examination of public policies is imperative in the context of university research, as research development in any country's higher education sector is affected fundamentally by the socio-political contexts rooted in respective government policies (Leathwood & Read, 2013; Edgar & Geare, 2013; Cloete *et al.,* 2015). In this regard, the analysis of Tanzania's HEP sought to reveal the objectives and commitment to developing research in the country's higher education sector.

5.3 Procedures for the examination of Tanzania's HEP

Codd's (1988) framework, entitled *The Construction and Deconstruction of Educational Policy Documents,* facilitated the examination of the higher education policy assumptions and ideologies underpinning the development of research in Tanzania's higher education sector. Codd (1988) argues that policy

documents normally do not embrace only one authoritative meaning, and nor do they articulate a set of government's unequivocal intentions. Rather Codd argues, they have been created within a specific political and historical context, which calls for policy critics to unravel that context. The objective of deconstructing policy documents is not to express the intended meaning of the policy authors, but rather to establish their actual and possible effects on policy readers and implementers.

Codd (1988) also insists that the analysis of policy texts could be enhanced by empirical evidence from various stakeholders affected directly by the policy. As suggested by Codd (1988), the analysis of policy documents in this study was supplemented by interviews and FGDs held with higher education policy-makers, senior university leaders, members of academic staff and postgraduate students. In other words, two elements were examined in relation to policy analysis (a) the policy intentions as stated in policy texts; (b) the views of policy actors (at national and institutional level) and the policy implementers – senior university leaders and academic staff currently on post and postgraduate students as future implementers of whether these policy intentions are being achieved.

As detailed in Chapter 4, identification of relevant documents related to Tanzania's HEP, in both print and electronic format, was guided by the study's four research questions. As the study sought to establish the development of a research culture in Tanzania's higher education, the HEP documents analysed were those created since 1961 when Tanganyika, the nation-state that forged a union with Zanzibar in 1964 to create the United Republic of Tanzania, achieved independence from Britain. This was purposively done to trace the evolution of the culture of research in Tanzania's higher education sector over the years since independence.

The HEP-related documents were requested from the headquarters of the Ministry of Education and Vocational Training (MoEVT) and the Tanzania Commission for Universities (TCU) offices, and from higher education institutions under study (see Appendix H). Other documents were accessed from the internet and respective institutional websites, using key search terms such as research policy in Tanzania, higher education policy and Tanzanian universities. The search produced policy documents including *Tanzania's Research and*

Development Policy, the Tanzania Higher Education Policy and *General Guidelines and Standards for the Provision of University Education in Tanzania* (see Appendix H). The search of policy documents was followed by a careful reading that facilitated the evaluation and interpretation of their meaning in relation to the purpose of the study. Data collected from policy documents were corroborated and supplemented by the data collected through interviews and focus group discussions. Braun and Clarke's (2006) thematic analysis guided the analysis of data (see Chapter 4). The analysis of Tanzania's HEP identified five major themes and issues (see Figure 5.1), which are presented in section 5.5. The following section (5.4) familiarises the reader with the profile of higher education in Tanzania.

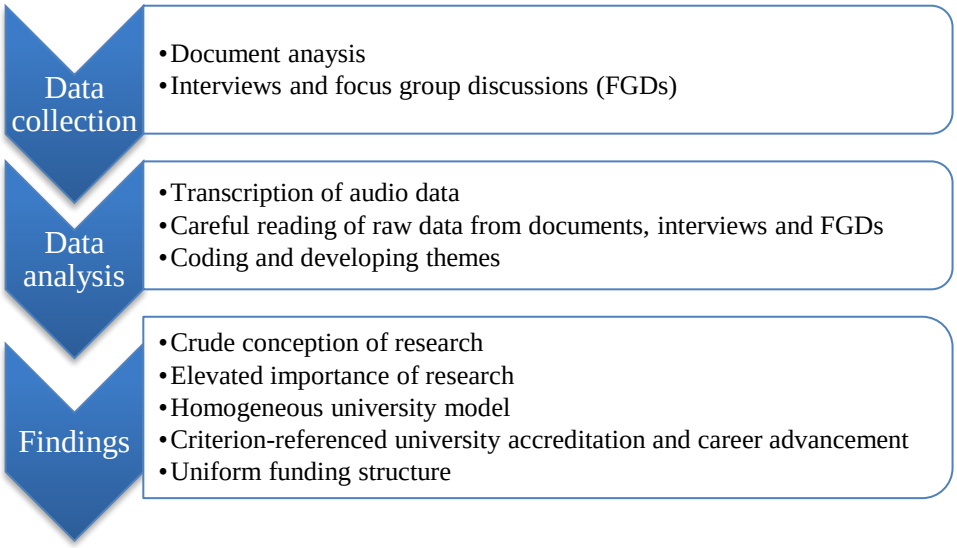

Figure 5-1 Key Issues from the Examination of Tanzania's Higher Education Policy

5.4 Profile of higher education in Tanzania

Before presenting key themes and issues resulting from Tanzania's HEP analysis, it is relevant to familiarise the reader with the profile of higher education in Tanzania. The aim of this profiling is to inform the reader of the developments and practices of the higher education sector in Tanzania, so that one can understand the context of higher education in which the study was conducted. In addition, this profiling is aimed at creating a foundation for discussion and interpretation of the study's findings. Against this backdrop, this section focuses on the genesis and development of Tanzania's higher education, governance and

management structures and types of higher education institutions present in Tanzania. The section also presents the higher education enrolment capacity, academic programmes on offer, finance issues and academic staff profile.

5.4.1 Genesis and development of higher education in Tanzania

The establishment of Makerere College in Uganda in 1922 during British colonial rule, and later in 1949 when Makerere College acquired its university status, laid the foundations of higher education in Tanzania. Makerere, which was an affiliate of the University of London, was then founded as the University of East Africa, serving three East African countries: Tanganyika (now Tanzania), Kenya and Uganda. It admitted its first undergraduates in 1950 (Eshiwani, 1999). After a few years of operation, the Makerere University of East Africa was labelled too limited to educate a large number of the East African population. This led to the establishment of two other higher education institutions in East Africa: the Royal College of Nairobi in 1956 and the University College of Tanganyika in 1961, to serve both Kenya and Tanganyika, respectively (Kuhanga, 2006; Ngome, 2007). These two university colleges were also affiliates of the University of London.

By 1963, the three East African countries had gained their independence from British colonial rule. Tanganyika attained independence in 1961, followed by Uganda in 1962, and Kenya in 1963. Following their independence, the three East African governments formed a federal university, named the University of East Africa (UEA), with its headquarters based in Uganda. As with each East African university, the University College of Tanganyika was then an affiliate of the UEA and was renamed the University College, Dar es Salaam (UCD). The University of East Africa was, however, short-lived because of the ideological differences that existed among the three East African nation-states (Eshiwani, 1999; Kuhanga, 2006). This federal university was dissolved in 1970 to give birth to three fully-fledged universities – Makerere University (MU) in Uganda, the University of Nairobi (UN) in Kenya and the University of Dar es Salaam (UDSM) in Tanzania. On the whole, when compared with many other places in the world, higher education in Tanzania has a relatively young history.

5.4.2 Types of higher education institutions present in Tanzania

The higher education sector in Tanzania comprises universities which are state-owned or public universities and private-owned or private universities. Before 1996, the provision of higher education in Tanzania was the responsibility of the solely public sector. The private sector came in after the introduction of the national Education and Training Policy (ETP) of 1995 that invited and encouraged individuals, firms, groups of people and non-governmental organisations to establish and manage higher education institutions. Thus, private universities in Tanzania began officially to operate in 2000. The key characteristic that differentiates public from private universities within Tanzania is funding and management. The government provides the funding for public universities and civil servants oversee these institutions. Conversely, private universities are managed and financed by their individual owners. Despite having self-institutional management, both public and private universities in Tanzania are nationally overseen by the Tanzania Commission for Universities (TCU), which came into being in 2005, to supersede the Higher Education Accreditation Council (HEAC), which had been in operation since 1995.

There are 11 public and 17 private universities, as well as four public university colleges and 15 private university colleges (TCU, 2013); thus, there are a total of 47 higher education institutions currently operating in Tanzania. Of the private universities in Tanzania, more than 80% are affiliated with religious institutions. The term “university college” in Tanzania implies that such an institution is affiliated to a fully-fledged public or private university. Despite such an increase in universities, from one in 1970 and two in 1991 to 47 in 2013, the University of Dar es Salaam, which was the first to be established, remains Tanzania’s largest and most prestigious university. Many of the newly-established public universities initially started as constituent colleges of the University of Dar es Salaam before gaining autonomous status. Moreover, many of the established private universities in Tanzania have copied many of the traditions and practices of the University of Dar es Salaam (Mwaikokesya, 2014).

5.4.3 Governance and management of higher education in Tanzania

The higher education sector in Tanzania is managed by the Ministry of Education and Vocational Training (MoEVT). The MoEVT is mandated to formulate, monitor, evaluate and review various education policies at all education levels. Within the MoEVT, matters relating to higher education have been placed under the Directorate of Higher Education. In relation to university research, the Directorate of Higher Education, as shown in Table 5.1, *promotes and facilitates research activities in higher education institutions*. Three other agencies – the Tanzania Commission for Universities (TCU), the Tanzania Education Authority (TEA) and the Higher Education Students' Loans Board (HESLB) – were instituted to support the functions of the Directorate of Higher Education (see Table 5.1).

Table 5-1 Functions of Agencies Overseeing Higher Education in Tanzania

Agency	Functions
The Directorate of Higher Education	• To oversee and co-ordinate the provision of Higher Education (HE) both internally and externally by providing inputs in developing, monitoring, evaluating and reviewing the implementation of Higher Education policies, guidelines and standards. • To promote and facilitate research activities in Higher Education Institutions. • To develop and promote academic and professional excellence in Higher Education Institutions. • To co-ordinate management support services provided by Higher Education agencies. • To promote and sustain Regional and International Cooperation on Higher Education; and • To promote public awareness of functions and roles of Higher Education.
The Tanzania Commission for Universities	• To recognise, approve, register and accredit universities operating in Tanzania. • To co-ordinate the proper functioning of all universities in Tanzania and to foster a harmonised higher education system. • To control quality by evaluating and approving the quality of infrastructure, academic programmes, admission criteria and assessment of students. • To regulate and standardise criteria for recruiting, designating, and promoting academic, research and senior administrative staff. • To collect, examine, store in database or databank and publish information relating to higher education, research and consultancy.
The Tanzania Education Authority	• To support schools, colleges, and universities by providing grants and soft loans from its Education Fund.
The Higher Education Students' Loans Board	• To assist, on a loan basis, needy and eligible Tanzanian students who secure admission in accredited higher learning institutions. • To collect due loans from previous loan beneficiaries.

Source: TCU (2013); URT (2013)

The Tanzania Commission for Universities (TCU) was established in 2005 to regulate the provision of higher education and foster a harmonised higher

education system in Tanzania. Although universities in Tanzania are autonomous as they legally operate under their own charters, the TCU is mandated to control, approve, and ensure that all universities and university colleges in the country comply with the set of pre-determined functions and standards. The fundamental question in this study concerns how the Directorate of Higher Education and the TCU have been influential in promoting and facilitating research activities in Tanzanian universities. This aspect was empirically examined in the present study, as explained in the subsequent section 5.5.

The Tanzania Education Authority (TEA) was established in 2001 as a public organisation. Its main function is to provide grants and soft loans to schools, colleges and universities to facilitate the construction or rehabilitation of infrastructure, development of human resources and the supply of educational equipment and resources. Grants are provided in terms of textbooks and laboratory equipment, whereas loans are available to support infrastructural development. In 2011, TEA provided 2.1 billion Tanzanian shillings to support 127 educational projects, of which around 0.9 billion was remitted to three public universities and one private university to support the construction of hostels and lecture theatres (TEA, 2012). Given the availability of such funding, the question arises as to how keen Tanzanian universities are to solicit loans and grants from TEA to facilitate their research activities? Insights into this question will be provided in Chapter 6, which addresses the approaches that Tanzania's HEIs employ to develop a research culture.

The Higher Education Students' Loans Board (HESLB) was established in 2004 to oversee the provision of loans to low-income Tanzanian higher education students and educational loan recovery from graduates. The loan is provided primarily to eligible and needy undergraduate students admitted to both public and private universities, with priority being given to fields such as medicine, science-based and even education. The loan also extends – on a limited scale – to postgraduate students at both Master and PhD levels, specifically to those who pursue education programmes and work as academic staff in either public or private universities in the country. Another pertinent question that arises is, how ardent are Tanzanian universities in soliciting loans from the HESLB to

facilitate the professional training or development of their academic staff? Again, Chapter 6 provides insights pertaining to this question.

5.4.4 Enrolment capacity and academic programmes on offer

In general, the academic interest and the quest for advancing the frontiers of knowledge determine programmes and courses provided in Tanzania's public universities (Kuhanga, 2006; Mwakitalu, 2012). Thus, public universities offer programmes and courses in a variety of subject areas: social sciences, natural sciences and humanities. Unlike public universities, the traditions and purpose regarding the establishment of private universities are different. Since the majority of private universities are self-funded and income generating, they tend to offer market-driven programmes and courses that are of a high quality both in the education and the labour market (Varghese, 2004; Ishengoma, 2007; Mwakitalu, 2012). Consequently, most of Tanzanian private universities have opted for social sciences and arts programmes such as education, law, business administration, accounting, marketing, economics, computer science and communication. In addition, some religiously affiliated private universities offer compulsory religious courses for all of their students. For example, one Roman Catholic affiliated university offers Social Ethics and African Religion and Philosophy to all undergraduate students.

Like medicine and nursing, engineering is offered by only four private universities out of 17 in Tanzania. Private universities in the country tend to shy away from offering science and engineering programmes because these programmes demand substantial financial investment (Kuhanga, 2006; Ishengoma, 2007; Mwakitalu, 2012). This is contrary to the private universities in other countries such as India, where engineering and medical colleges are numerous, despite requiring substantial financial investment (Varghese, 2004; Mwakitalu, 2012).

In terms of enrolment, public universities absorb the largest share. For example, in 2012, they enrolled 68% of the total number of undergraduate and postgraduate students. Generally, the total number of students enrolled in non-degree programmes (certificate, ordinary diploma and advanced or higher diploma) was 23,094, of which 17,124 were enrolled in public universities, whilst

5,970 were enrolled in private universities. Enrolment for degree programmes (doctorate, master and bachelor degree) was 143,390 of which 97,407 were enrolled in public universities, whilst 45,983 were enrolled in private universities (TCU, 2013; URT, 2013). Table 5.2 presents the enrolment trend for degree and non-degree programmes from 2006/2007 to 2011/2012:

Table 5-2 Student Enrolment in Tanzanian Universities 2006/07-2011/12

Academic year	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
Enrolment	45,501	76,172	95,525	118,891	139,638	166,484

Source: URT (2013)

Table 5.2 indicates that there was an increase in enrolment from 45,501 students in 2006/2007 to 166,484 in 2011/2012, with an annual increase rate of 20%. This massive increase in enrolment is the result of an increase in access to HESLB funds and an increase in the number of universities (URT, 2013).

5.4.5 Academic staff characteristics and capacity

Recruitment and deployment of sufficient, experienced and well-trained academic staff to run all the programmes on offer are critical issues that universities have to grapple with (Kuhanga, 2006; Teferra, 2016). The current composition of academic staff in Tanzania paints a bleak picture because it does not match with the corresponding number of students. By 2012, the number of students enrolled in doctorate, master and bachelor degree programmes in Tanzania was 143,390, of which 97,407 were in public universities and 45,983 were in private universities. Overall, the number of academic staff members was 3,655, of which 1,096 hold bachelor degrees, 1,910 hold masters, and only 649 hold doctorates (URT, 2013). These statistics indicate that the total number of academic staff members is small when compared with the number of enrolled students, which widens the gap of staff-student ratio. Also, members of academic staff mainly constitute junior faculty, as 82% of all academic staff possessed no more than a master degree – see Chapter 7 for further discussion and comparative analysis.

Although comprehensive data on the academic profile of the academic staff in all Tanzanian universities and university colleges was not available during fieldwork, the literature suggests that there is a yawning gap between newly-

recruited young staff and the ageing senior staff in most of Tanzanian universities. In many of Tanzania's HEIs, over 80% of the senior staff are aged 50 years or above and are working on contract (Peter, 2014). At the University of Dar es Salaam, for instance, junior academic staff below the rank of a lecturer constitute 60-70% of the total academic staff, and over 70% of their professors are on contract terms following their retirement (UDSM, 2013). To cope with the academic staff deficit, universities – mainly private universities and newly-established public universities – rely heavily on part-time academic staff. These part-time academic staff work full-time at well-established public universities, something which raises concern over the quality of education provided by those institutions using part-time academic staff.

5.4.6 Financing of higher education in Tanzania

The government of Tanzania allocates annually around 17 to 20% of the total national budget to the education sector (URT, 2014b). The funds allocated to education from the government of Tanzania are too inadequate to meet the demands of the country's education sector. There is always a wide gap between the amount requested and the actual budget disbursed, which in turn tends to compromise the quality of education provided in the country (URT, 2014b). In the period between 2008 and 2012, for example, the annual budgets for tertiary education, of which higher education is a subset, have ranged between 20 and 25% of the total education budget. It is also worth noting that 50% of the higher education budget goes to the HELSB to facilitate the issuance of student loans, with universities normally receiving only 20-30% of their annual budget request (URT, 2014b). Tanzania's HEIs are, therefore, deprived of crucial funds that they need to run more effectively and efficiently.

The government of Tanzania initially funded its HEIs based on budgets proposed by each institution. After the introduction of a unit cost system in the 2000s, the practice changed. Unit cost refers to the amount of money an institution spends on a single student per degree programme. Under the unit cost system, the Tanzanian government funds each university by multiplying the unit cost of one student by the total number of students in the university. Nevertheless, the funds allocated to public universities by the Tanzanian government have been insufficient. Instead, policy statements and political leaders' speeches have

advised public universities to look for alternative funding and means for raising additional income to support their university's core activities (Kuhanga, 2006; Bastos & Rebois, 2011; URT, 2014b).

The main sources of income for private universities are grants and loans (primarily from TEA and HESLB), tuition fees (from students) and donations and fundraising (from voluntary contributors). Nonetheless, the amount received through government loans, grants, voluntary contributions and fundraising functions remains relatively small (Kuhanga, 2006; Bastos & Rebois, 2011; Mwakitalu, 2012). Thus, tuition fees are the dominant and reliable source of income for many private universities in Tanzania. In this regard, the bigger the number of students and tuition fees, the more the income for private universities. For any specified rate of tuition fees, private universities tend to attract a larger number of students by introducing marketable programmes and courses which are popular in the employment market (Kuhanga, 2006; Ishengoma, 2007; Bastos & Rebois, 2011).

In summary, this section has explored and shed light on the current status of higher education in Tanzania. Inadequate workforce and funding crises are the key issues facing the higher education sector in Tanzania, as shown in this section. How does Tanzania's higher education sector address such problems through developing university research is the core question of this study, and the following section 5.5 presents major issues resulting from Tanzania's higher education policy (HEP) analysis.

5.5 Key themes and issues identified from Tanzania's HEP analysis

As explained in section 5.3 and summarised in Figure 5.1 (p.130), the analysis of Tanzania's higher education policy (HEP) identified the following key themes: crude conception of research, elevated importance of research, homogeneous university model, criterion-referenced university accreditation and career advancement, and uniform funding structure. Each of the key themes is presented in the following subsections.

5.5.1 Crude conception of research

The primary objective of Tanzania's HEP analysis in this study was to understand how policy documents and higher education stakeholders such as policy-makers, university leaders, academic staff and postgraduate students conceptualise research. This objective is based on the premise that effective development of a research culture in higher education institutions and the implementation of a set of guidelines inherent in the research policy requires higher education stakeholders and research policy implementers to understand firstly what constitutes research, particularly in the present 21st century. A conception of what research is in higher education is crucial in order to determine the kind of investment to inject into universities. Furthermore, the energy and expenses to be dedicated to develop university research are dependent upon the policy-makers' and higher education stakeholders' understandings and the value they attach to research (Fenwick, 2012; Cloete & Bunting, 2013; Trotter *et al.,* 2014).

The present study has found that research is crudely and ambiguously conceptualised. The conception of research is largely based on basic research – research conducted for theoretical purposes or the advancement of knowledge frontiers, and leaving out the applied research – research for practical purposes. This is confirmed in the following statement:

> A lot of research is being done but it's not being communicated or disseminated beyond referred publications so that it can benefit the community. (Academic Staff: RS3)

This statement indicates that there is a reluctance to some members of the university research community to disseminate information that they generate from research beyond the peer-reviewed journals. This kind of thinking is also supported by the following statement:

> People do engage in research mainly to fulfil their academic requirements, for instance, degree and promotion not to benefit the general society. (Postgraduate Student: RS5)

In this way, members of the university research community believed that their research business ended after they had earned their respective academic degrees and promotions. They did not see their research as something that they

can directly use to change society. In reflecting on what compelled to such an established thinking, participants rest their arguments on career advancement policies at both the institutional and national level, as these policies force academics to do research for publication and then obtain promotion:

> When you are stressing research for the sake of publishing, you are not building a research culture, but you are forcing people to publish and be promoted, but when you are cultivating a research culture what you need to do is to make people see research as an integral part of their involvement in the university. (Faculty Dean: RS3)

This statement supports the notion that research is crudely construed as individual property with publication epitomising the reward that such research should engender. Although one of the policy guidelines stipulates the broader purpose of research, which includes both theoretical and practical purposes, it was also found wanting, as explained in the following statement:

> Research conducted by institutions should be relevant to the development agenda of the country [Tanzania], promote the frontiers of knowledge, promote science, technology and innovation and solve immediate problems of the society. (TCU, 2014, p.18)

Generally, the policy guidelines lacked emphasis on both basic and applied research and the kind of efforts or infrastructure that are required to facilitate the effective and efficient conduct of research in Tanzanian universities on a continuous basis. Moreover, the policy guidelines do not state how the knowledge generated through research can be disseminated, particularly beyond the peer-reviewed publications, so that they can be utilised to solve societal problems. This creates a significant tension not only in fostering a research culture among academics, but also in making use of the knowledge generated from research to improve the livelihoods of Tanzanians and others.

5.5.2 Elevated status and importance of research

Seeking to understand how Tanzania's higher education policy context and education stakeholders value research was another primary objective regarding Tanzania's HEP analysis in this study. Similar to the question of how research is being conceptualised within Tanzania's higher education policy context, as presented in section 5.5.1, an understanding of the importance of research

among the country's policy makers and education stakeholders could determine the level of investments and efforts dedicated to develop a research culture in Tanzanian universities. The findings show that policy documents contain statements that underscore the value and importance of research and inculcation of a culture of undertaking research for sustainable development. Likewise, the participants indicated awareness of the value of research in the country. They also affirmed the significance of fostering a research culture within Tanzanian universities:

> Research should be given more importance than [it is] now because research brings about new knowledge, new skills, new attitude, and research is the only way through which universities, as well as the nation, can benefit from innovation which, as a result, may lead to social and technological development. (Higher Education Officer: RS2)

Participants also insisted that there should be a direct link between researchers at the university and stakeholders that need to utilise the research knowledge. The implication is that research in Tanzania is highly regarded in addition to being treated as a panacea to bolstering the country's socio-economic development.

Similarly, the Tanzanian government in 2010 reformulated the National Research and Development Policy to replace the National Science and Technology Policy (NSTP) of 1996. Although it addressed issues of research, the NSTP was found less effective, as it was biased towards the supply side of R&D (Research and Development), at the expense of the demand side which entails innovation in relation to market forces (URT, 2010b). Thus, the National Research and Development Policy stresses that R&D [Research and Development] cannot be separated from the development and competitive capacities and capabilities of a nation:

> Research plays a very crucial role in the socio-economic development of any society… The industrial revolution in Europe during the 18th and 19th centuries was based on extensive scientific research that led to a lot of discoveries… include the steam engine, manufacturing processes, machines and machine tools, textiles, pharmaceuticals, agro-chemicals, industrial chemicals and electricity. (URT, 2010b, p.v)

Consequently, the National R&D Policy streamlines the use of natural resources in the country to promote research and development activities and guarantee that adequate budgets are allocated to research by the government of Tanzania (URT, 2010a). The R&D policy also underlines the application and commercialisation of research findings, which is central to solving community problems and bringing about national development.

5.5.3 Homogeneous university model

The analysis of Tanzania's HEP simultaneously sought to determine how research is established in the country's universities. The underlying objective of pursuing such a line of enquiry was to develop an understanding of whether Tanzania's higher education sector has differentiated the university mission in relation to research and teaching. As detailed in Chapter 3, mission differentiation is one of the key variables determining a country's commitment to building a successful research culture in its higher education sector (Shin, 2013; Altbach, 2013; Hladchenko *et al.*, 2016). This study has found that research constitutes a core element of the mission of higher education in Tanzania. All universities operating in Tanzania – both public and private – are legally bound to include research in their prescribed core university functions. Participants involved in this study and key policy documents reviewed, such as the *2014 General Guidelines and Minimum Standards for Provision of University Education in Tanzania* and the *National Higher Education Development Programme (HEDP) of 2010*, (URT, 2010a; TCU, 2014, p.18) all attest to the legal obligation for universities to undertake research as one of their core functions as the following statement explain:

> Right from the time this nation [Tanzania] decided to establish the first university, teaching, research and consultancy or public service were the core functions and then in the subsequent years when [more new] universities were coming up, each university definitely attempted to focus on those core functions. (Higher Education Officer: RS1)

In other words, research remains central to the mission of higher education in Tanzania. Similarly, a review of prospectuses and websites of the four universities under study indicated that their core functions, *inter alia*, include research (see Table 5.3, p.165). These findings imply that the higher education

system in Tanzania classifies all of its higher education institutions as largely research-based as opposed to teaching-only universities, in contrast to Canada, the United Kingdom, China, Hong Kong and Korea, where the two distinctive classifications are evident: teaching universities and research universities. A "research university" is usually a higher education institution combining both teaching and research in its core functions, whereas a teaching university, as its name suggests, concentrates largely on teaching. Even the teaching load varies between teaching and research universities, with academic staff being allocated a heavier teaching load in the former than in the latter.

Table 5-3 Mission Statements of the Universities Under Study

Institution	Mission Statement
Research Site 6	• Being a centre of excellence by providing a high quality of education, research and public service.
Research Site 5	• To provide a Christ-centred university education by focussing all its programmes through the guidance of and obedience to the word of God and conducting higher education, learning and research through scientific fact-finding and enquiries to all students without discrimination.
Research Site 4	• To provide opportunities for the acquisition, development, preservation and dissemination of knowledge and skills through training, research, technical and/or professional services.
Research Site 3	• To advance the economic, social and technological development of Tanzania and beyond through excellent teaching and learning, research and knowledge exchange.

Source: Field Data

5.5.4 Criterion-referenced university accreditation and career advancement

The higher education policy analysis in this study also sought an understanding of whether research is part of the university career and institutional accreditation, and if it is: What role does research play in influencing university accreditation and the university career? Empirical literature reviewed in Chapter 3 indicated that research-based university accreditation and career advancement is one of the key strategic policy initiatives that governments use in developing university research on a sustainable basis (Altbach, 2013; Nguyen, 2016). The present study has found that research is treated as a prerequisite for a university to obtain a certificate of full accreditation (CoA) and for academic staff working at the university to climb the academic career ladder.

The Tanzania's University regulations of 2013 specify two university accreditation stages: provisional licence (PL) and certificate of accreditation (CoA) (TCU, 2014). Research is one of the components considered when an

institution is evaluated for full accreditation (CoA). The Tanzania Commission for Universities (TCU) – the higher education accreditation body in Tanzania – first request the university to conduct a self-institutional assessment, whereby the university assesses itself in all its core functions, then the assessment report is submitted to the TCU. Senior university leaders involved in this study confirmed that their universities submitted institutional self-assessment reports, as required by the TCU, when seeking full accreditation. The report forms the basis for the TCU to conduct the external assessment to validate the institutional self-assessment. In their evaluation, the TCU looks at the number of publications the university has produced through its staff, whereas they have set minimum requirements of research and publications by staff as ideal situation [75-100%], good situation [50-74%], and acceptable situation [30-49%]. At least 30% is needed for a university to pass a research component requirement on the evaluation process. This is confirmed in the following statement:

> We have set requirements of publications by staff in three categories: ideal situation [75-100%], good situation [50-74%], and acceptable situation [30-49%], where 30% is a minimum amount needed for passing a university. (Higher Education Officer: RS2)

This statement demonstrates that research is one of the key components in the criteria for university accreditation in Tanzania, whereby a minimum of 30% of an institution's research strength is required for a university to obtain full accreditation. This orientation is also attested to by the strategic policy document entitled the *General Guidelines and Minimum Standards for Provision of University Education in Tanzania of 2014* (TCU, 2014, p.17). The TCU's (2014) guideline also stresses that institutions must ensure that their academics regularly undertake research and publish in different publication outlets to improve the institutional research profile and better themselves for full accreditation and operation.

Research also characterises the university career advancement structure. The policy guideline stipulates that for academic staff, progression to higher ranks requires research and publishing. The seniority in rank are Professor or Research Professor at the apex, followed by Associate Professor or Associate Research Professor, then Senior Lecturer or Senior Research Fellow, Lecturer or Research Fellow, Assistant Lecturer or Assistant Research Fellow and Tutorial Assistant at

the lowest. Climbing from one rung to another requires promotion, of which criteria involves research and publishing in peer-reviewed publication outlets such as academic journals and books (see Appendix M). Correspondingly, a review of university recruitment and promotion guidelines for the universities under study also showed the integration of research in the academic staff's career advancement structure and constituted an essential criterion for assessing their eligibility for promotion (see Chapter 6).

The prevailing question is: How serious is research-based university accreditation policy in Tanzania? As the findings reveal, senior university leaders involved in this study confirmed sending their institutional self-assessment reports to the TCU to obtain a certificate of full accreditation (CoA), which is the highest and final stage of university accreditation in Tanzania. Given that all of the four universities under review had obtained a certificate of full accreditation, this suggests that the four universities had passed a minimum requirement of 30% of research outputs needed for a university to obtain a certificate of full accreditation. That said, what happens when the TCU's evaluation report indicates that the institutional research outputs are below a minimum of 30%? The findings demonstrate that the research criterion was not seriously observed when evaluating and vetting universities for full accreditation.

The assessment of universities focuses much on teaching than research. Participants confirmed that the TCU normally does not assess research as intensively as important criterion, although it is stipulated in the policy. In fact, the assessment mainly considers basic facilities that can support teaching activities such as adequate number of academic staff, various officers for specific services, programmes which are on offer, classrooms, laboratories, offices, dormitories, and the financial aspect of the institution if it is sustainable to run the programmes on offer. This is indicated by the following statement:

> … the research and consultancy dimensions, although they exist in our guidelines and requirements, are often overlooked during evaluation. It becomes OK with us whether the university report indicates excellent research strength or poor research strength… (Higher Education Officer: RS2)

Some participants maintained that since universities are autonomous institutions operating under their own charters, the task of assessing and enhancing their academic core activities by higher education authorities in the country is left within these universities. As long as graduations are taking place every year and some staff are obtaining their career promotions, the assumption is that teaching and research activities are going on well:

> We just take for granted that the teaching activity is going on well because we see every year graduations take place… the same applies to research… we don't have that system of monitoring how research or teaching is conducted in the universities. (Higher Education Officer: RS1)

The implication is that research, which is supposed to be the mainstay of the universities – that all universities in Tanzania are ironically supposed to be – is side-lined when reaching a decision on conferring a certificate of full accreditation on institutions. When asked about the reasons for such a leniency of evaluating research component, participants attributed to the lack of a research unit or department in the TCU.

> It is difficult to monitor research in universities because the TCU itself lacks a specific unit that deals with research assessment as far as university accreditation is concerned. (Higher Education Officer: RS2)

The smaller number of universities that exist in Tanzania was also mentioned as another reason for the accreditation body's leniency when evaluating the research component for university accreditation, hence letting some institutions get off the hook despite having serious shortcomings in research:

> I have never witnessed any university being denied a registration or accreditation based on research. Given a smaller number of universities currently exist in the country, universities are often given a grace period to improve their research capacities. (Director of Research: RS3)

Indeed, participants involved in this study explained that strict enforcement of compliance with research would deny some universities accreditation at a time when Tanzania needs these institutions for training high levels of manpower essential for national development.

5.5.5 Uniform funding structure

The modality of university funding, particularly research funding, used by the government of Tanzania was also central to the analysis of Tanzania's HEP in this study. The modality of research funding is one of the key variables determining a country's dedication and seriousness in developing university research (Shin, 2013; Heyneman & Lee, 2013; Hladchenko *et al.*, 2016; Huber, 2016). As demonstrated in Chapter 3, governments use either block funding or performance-based funding or a combination of both methods when funding their higher education institutions and research in particular. This study has found that the government of Tanzania uses mainly a block funding method. Block funding is used to provide funds to the country's universities through multiplying student unit cost by the total number of students within a given university. Under this block funding, the Tanzanian government provides two types of funds in universities, one is development and another is recurrent (operational funding). Universities are directed to use the development funding for institutional renovation and recurrent funding for facilitating teaching, research and other related activities. During fieldwork, some senior university leaders said:

> Research money is included in the OCs [operational costs]. The government does not tell you what to do with the OCs and we just use it for administrative operational activities… [including] preparing research proposals. (DVC Research: RS3)

In this way, research funding is included in the group of expenditures such as electricity bills, water bills, teaching and learning materials and staff training. Moreover, research is not mentioned anywhere in the government subventions provided to private universities in Tanzania, in the form of tax relief on educational materials and loans for student and staff development and training remitted through the Tanzania Education Authority (TEA) and the Higher Education Students Loans' Board (HESLB).

Nevertheless, the Tanzanian government allocates a small, limited amount of research funding to Tanzanian universities, as it spends around 0.3% of its Gross Domestic Product (GDP) on research and development (R&D) (URT, 2014b; UNESCO, 2015). The 0.3% allocation should cater for all of the country's research

institutions and universities both public and private. Participants involved in this study maintained that the said 0.3% of GDP is too small to meet the research needs of the country. Indeed, this research and development fund is not a direct allocation (block grant), where every university could have a chance of securing a portion of the overall amount; rather, it is available on a competitive basis as all of the country's university and non-university research institutions are forced to compete for the limited funds available. Additionally, the said research funding is an unreliable source of funding, as it is announced only when the fund is available, something which creates uncertainty regarding its sustainability. One of the study's participants offered this statement:

> I can remember that from 2010 to 2011 that's when the government started to allocate a specific fund for research to higher education institutions. Basing on the national thematic priorities, universities were directed to develop their research proposals and apply for that fund. (Higher Education Officer: RS1)

Another participant added:

> When the research fund is available, the government via COSTECH [the national co-ordinating agency of R&D activities] calls for research proposals from both universities and non-university research institutions based on selected themes… it is very competitive. (Director of Research: RS4)

The complaints surrounding the inconsistency of the research funding allocation, as indicated in the foregoing statements, were supported by a recent visit to the Tanzanian Commission for Science and Technology's (COSTECH) website. The commission website showed that the most recent date that the Tanzanian government issued a last call for research proposals for research institutions in the country to solicit the R&D funding was in 2013 (COSTECH 2016). The implication is that a direct funding allocation (block funding) has remained the common funding method that the government of Tanzania employ to fund its universities in general and research in particular.

To sum up, findings regarding the influence of Tanzanian higher education policy context on the development of a research culture that have been presented in this section show that there exists a crude conception of research, although research is highly regarded and treated as a panacea to fostering the country's

socio-economic development. The policy context lacks emphasis on both basic and applied research. Furthermore, Tanzania does not differentiate the university funding structure and the university mission in relation to research and teaching. How do these findings create tension in developing a successful research culture within the country's universities? The following section (5.6) discusses the findings as presented in this section.

5.6 Discussion of the findings

The discussion of the findings in this section follows the order used to organise the presentation of the same findings in section 5.5, in order to ensure clarity.

5.6.1 Crude conception of research

An understanding of how research is conceptualised in the Tanzanian higher education context was central in the present study in order to determine efforts needed to develop a research culture in the country's universities. This study has found that there is still a crude and ambiguous conception of research, primarily due to generally overlooking the practical aspect of knowledge generated through research. The understanding of research was delimited to conducting scientific investigations and publishing the results in peer-reviewed publication outlets such as journals and books.

Admittedly, some controversies exist among funding agencies, evaluators, higher education institutions, academics and students on how precisely research, particularly in higher education, should be defined and measured (Hazelkorn, 2005; Morgan-Jones *et al.*, 2013; Leathwood & Read, 2013; Harley *et al.*, 2016). Nevertheless, the general consensus is that research in university settings is a cyclical process or activity which involves conducting scientific investigations (whether empirically or theoretically based), writing reports based on the findings generated, disseminating findings and seeking or assessing the impact of the disseminated findings to the community. In this way, both pure and applied types of research are included in the equation defining research and the communal ownership and involvement in research can be demonstrated.

The understanding of 'research' as explained in the foregoing paragraph is contrary to what the findings established in this study. As demonstrated in the findings reported in this study, the current understanding of research has been largely influenced by the career advancement policies that place greater emphasis on academic publications in order for academics to secure employment, tenure and pay rise. As such, the exoteric dissemination of one's research-based knowledge beyond the confines of the academic corridors to the wider community who stand to benefit from such research is largely ignored, when it should be an integral part of such research-based knowledge generation.

A reasonable conception of research would have gone beyond the production of research reports based on the research findings and embraced the practical application of those research results for the impact of research to be felt in the community and for the betterment of Tanzanian society. Although the presentation of papers at academic conferences and the publication of research results in journals and books are popular methods of knowledge dissemination and transfer, uncertainty, however, exists on whether these channels allow the knowledge produced through research to reach those who need it most and bring about the desired impact on the community (Lomas, 1993; Lavis *et al.,* 2003; BIS, 2014; Olmos-Pe˜nuela *et al.,* 2014). Bennett and Jessani (2011) had this view regarding relying greatly on research-based publications as medium of knowledge dissemination:

> If the only goal of research is to influence the state-of-the-art or target only other researchers, then this [academic journals] is all you need. However, many scholars in low and middle-income countries (LMICs) are unlikely to have full access to peer reviewed publications. If, however, the aim is to change or influence policy, this tool is woefully inadequate. Beyond scientists and academics, the audience for scientific journals is approximately zero. To non-scholars (the majority) the language of journals is somewhere between deadly dull and incomprehensible (p.132).

The implication is that the research-based knowledge disseminated through academic journals and conferences may largely reach professionals in particular fields but not the non-academic community who constitute the majority and who need this knowledge the most for improving their livelihoods beyond the confines of academia.

International experience has also shown that developed countries factor in the aspect of research utilisation and impact in their national research policy contexts and practices. Around a decade ago, Australia began considering how to assess the impact of university research experienced beyond the corridors of academia. With the aim of introducing the university research impact criterion into the national research assessment policy, in 2006, Australia conducted a pilot study on how the impact of university research could be assessed. Although the change of national leadership in 2007 disrupted the process, the pilot study laid the foundation for subsequent like-minded pilot studies after the research impact criterion was brought back into the national policy agenda (Morgan-Jones *et al.,* 2013).

In the United Kingdom, following a pilot study, it was established that the assessment of research impact is workable and this was adopted in the 2014 Research Excellence Framework (REF) exercise, with its weighting standing at 20% of the total 2014 REF assessment. The 2014 REF exercise was the first UK REF assessment to evaluate both the university research output and the impact of university research on Britain's communities and overseas in the economy, culture, society, public policy and the quality of life (REF, 2014; King's College London and Digital Science, 2015). In the 2014 REF exercise, higher education institutions (HEIs) in the UK were asked to submit impact case studies showcasing how their research undertaken in the past 20 years had benefited the local and international society beyond the confines of academia. Around 6,975 impact case studies were submitted from 154 UK HEIs (REF, 2014; King's College London and Digital Science, 2015). The results of the 2014 REF impact assessment confirmed that the UK's university research holds a diverse and wide impact across the United Kingdom and abroad in relation to economic, social and political aspects.

Although there is an ongoing debate with regard to how the impact of university research can be assessed, as explained in Chapter 3, factoring in the aspect of research utilisation and impact in national higher education policy and practices, as seen in the United Kingdom and Australia, serves as a learning experience to higher education stakeholders. University research communities and education stakeholders become more familiar with what research entails and what kind of

energy and investment should be expended, in order to develop and conduct research on a sustainable basis.

5.6.2 Elevated status and importance of research

Data reported in this study show that research is accorded a high status in the national policy proclamations and can serve as a panacea for Tanzania's socio-economic problems once these policy proclamations are implemented accordingly. The presence of Tanzania's National Research and Development Policy also indicates the government's seriousness about research – at least at the articulation level. This National Research and Development Policy streamlines the development of research by attracting more human, physical and fiscal resources directed towards enhancing research capacities within Tanzanian universities.

Policy declarations are a major indication of a government's resolve and commitment to developing university research, because they set directions for practically everything taking place in the real world (Dye, 2005; Rizvi & Lingard, 2010: Johnson & Louw, 2014; Nguyen, 2016). This argument is in line with the Stufflebeam's CIPP framework guiding this study, which advocates the evaluation of a country's political context to determine the country's commitment to developing a research culture in higher education. As the findings of this study reveal, placing research at the top of the national policy agenda and having a national research policy to guide research initiatives in universities, constitutes a key strategy for stimulating the development of university research. This is evident in countries such as the Netherlands, the United Kingdom, Australia, New Zealand, South Korea, China and South Africa, which have well-established national research policies that foster a research culture and improve research performance in their universities to a degree of excellence and set international standards, which subsequently serve as models for other countries (Chirikov, 2013; Maphalla, 2013; Edgar & Geare, 2013; Heyneman & Lee, 2013; Shin & Jang, 2013; Leathwood & Read, 2013).

Tanzania, as the findings illustrate, has learned from these nations by instituting a National Research and Development Policy in a bid to foster its own development of research in the country's universities. However, it still faces

some limitations. These are also apparent in this National Research and Development Policy and warrant some critical attention. The Tanzania National Research and Development Policy is overloaded with responsibilities as it strives to cater for all of the research institutions in the country, including university and non-university research institutions, both private and public. Although both university and non-university research institutions relate to knowledge production, the missions for their establishment differ. Universities provide teaching and research services whereas non-university research institutions mainly function as research factories. As such, it becomes problematic for the National Research and Development Policy in Tanzania to manage both the higher education institutions and independent research institutions accordingly, when the two may have competing interests, particularly in the face of a critical shortage of public research funding.

As this study's findings indicate, both university and non-university research institutions receive equal treatment when it comes to research funding, whilst, as previously explained, each group has its own mission and functions. The government of Tanzania places its small research sum in a basket overseen by COSTECH, for which higher education institutions compete with non-university research institutions, thus making the resultant competition cut-throat and primarily one of conflict. In consequence, university research gets short-changed and fails to get the funding it may deserve. The more advantageous option is to separate universities and independent research institutions as a matter of policy, in order to facilitate the way they are managed and the way they access research funding. University research flourishes mostly when universities do not compete for funding and other infrastructural facilities with non-university research institutions (Altbach, 2013; Hladchenko *et al.*, 2016). Even the national research policies of developed and emerging economies mentioned in this section and which are taken to constitute global models with a proven track record in promoting a research culture in their respective HEIs, were developed to accommodate and function for only higher education institutions.

5.6.3 Homogeneous university model

The findings of this study show that research in Tanzania constitutes a core element of the mission of higher education, as any university based in Tanzania –

whether public or private – is legally obliged to combine both teaching and research in its core university functions. The implication is that the higher education system within Tanzania operates under the homogeneous university model, wherein all its higher education institutions can be referred to as research universities, as opposed to the bifurcation university model where a classification of teaching universities and research universities is evident. In fact, a classification of universities based on mission and function across the world has resulted in two distinct types: teaching universities and research universities. Some countries have adopted both types of universities in which research and teaching universities exist in their higher education systems, whilst others have opted for only one type of university where their higher education systems do not differentiate between the two: research and teaching universities.

A move towards research universities is an essential course of action that Tanzania has opted to take. Research universities have been accepted by many countries as instrumental in contributing significantly to the success of the knowledge-based economies and the ultimate development of society. In particular, research universities are considered crucial for producing not only knowledge, but also a highly critical and educated workforce to run both universities and non-university research institutions, which are the hub of the country's knowledge creation and transfer (Nowotny *et al.,* 2011; Russell Group, 2012; UNESCO, 2015; Cloete *et al.,* 2015). In this regard, Altbach (2013) argues that all countries need research universities in order to claim their place within global scientific knowledge production, and for them to participate effectively in the 21st century's knowledge-based economy.

There is a general consensus among academics that universal guidelines for developing research universities do not exist because these kinds of institutions require the interplay of general and contextual factors (Taylor, 2006; Shin, 2013; Hladchenko *et al.,* 2016). Studies of research universities have, nonetheless, pinpointed three common basic characteristics: sufficient resources, gifted and talented academics and students, and an efficient and supportive team of management (Bienenstock, 2008; Salmi, 2009; Chirikov, 2013; Altbach, 2013). In other words, research universities require a heavy investment of fiscal, physical

and human resources for their effective operation and sustainability. This explains why many high-income countries such as Australia, the United Kingdom, Canada, Japan, China, Korea and Hong Kong, have opted for a bifurcation university model to accommodate both research and teaching universities. There are, for instance, 261 research universities out of 4,000 HEIs in the United States, 100 research universities out of 3,000 HEIs in China, and 25 research universities out of 400 HEIs in the United Kingdom (Russell Group, 2012; Altbach, 2013).

Whilst countries with developed economies have opted for the bifurcation university model, Tanzania has opted for the homogeneous model of a research university. Thus, arises the question: Is the homogeneous model of a research university currently the most appropriate or suitable model for Tanzania? Despite its good intentions and aspirations towards developing a prosperous research culture within the country to eventually improve the production and application of research-based knowledge, it is inappropriate for a less developed country such as Tanzania to show a preference for the research university-only model to the bifurcation model of research and teaching universities, given its present level of development. Tanzania's lack of readiness is evidenced in the present study's findings, to the effect that the Tanzanian government has fared below par in providing sufficient research funding to universities, consequently forcing most of its institutions to operate primarily as teaching universities. They do not only lack research funding but also the required infrastructure, machinery, and highly trained versatile university researchers needed for successfully operating research universities.

It is, indeed, worth mentioning that Tanzania has been operating this homogeneous university model since it gained independence in 1961; however, over the years, the model has not registered remarkable success. The global contribution of the country's research outputs in terms of publications and number of researchers has been minimal and the performance of its universities in global university rankings has been insignificant (UNESCO, 2015; Bothwell, 2016). According to the *2016 Times Higher Education World University Rankings*, Tanzania's universities, for example, do not feature in the list of the world's top 800 universities and even in the list of 15 best universities in Africa, whilst South

Africa is represented by six universities, Egypt (three universities), Morocco (two universities) and one university each for Nigeria, Kenya, Ghana and Uganda (Bothwell, 2016).

The implication is that it appears near impossible to achieve the desired outcomes with the current homogeneous university model in Tanzania. Even then, there is no guarantee that local universities in the country will live up to their billing as research universities or aspiring research universities for a number of reasons such as limited funding, shortage of highly trained manpower and pressure to produce as many undergraduate students as possible with postgraduate research-based programmes still operating on a limited scale. Under this scenario, the universities in Tanzania end up operating as largely teaching universities, as has been reported elsewhere, with the policy in place partly to blame.

Lewis and Simmons (2010), Altbach (2013) and Hladchenko *et al*. (2016) made similar observations regarding other developing countries, explaining that they did not possess a well-organised system in place that appropriately defines and supports research universities. They recommended that research universities within these countries must be clearly defined and supported in order for them to flourish and grow. Such a recommendation could be possible if developing nations such as Tanzania reorganise their higher education systems in order to adopt the bifurcation university model, so that a small number of research universities can be developed and adequately supported. As explained elsewhere in this study, countries that have succeeded in building a successful university research practise mission differentiation within their higher education systems, as confirmed in the following statement:

> In the UK, we are fortunate enough to have some of the world's very best universities. But other countries are also deliberately and consciously concentrating public funding in order to build up a small number of research-intensive universities. Already more than £1.2 billion has been invested in South Korea and there are plans to invest £2 billion in Germany. Our competitors increasingly recognise that they need a more diverse higher education system and that nations can't afford to fund all universities at the same level. But diversity is not only a necessity; it is a strength (Russell Group, 2012, p.1).

This implies that other countries in the world are increasingly recognising that running solely a homogeneous model of research universities is costly as funding all universities at the same level is unrealistic, let alone feasible; therefore, opting for a bifurcation university system has become the norm. As outlined in Chapter 3, the popular example of the bifurcation university model is the three-tiered system of the public higher education in California in the United States, namely the University of California system, the California State University (CSU) system, and the Community College system (Bienenstock, 2008; Altbach, 2013*)*. Academic staff members in the University of California system are expected to be actively involved in research, with teaching kept to a minimum level, as this high-level system has only 10 campuses that enrol only 8% of the top high school performers.

Moreover, the California State University (CSU) system majors in teaching with a minimal involvement in research. The CSU system has 23 campuses that admit around 450,000 students and offer only Bachelor and Master degrees. Faculty in the CSU system are expected to undertake only a small amount of research. The Community College system is the third and largest, whose primary mission is teaching and service. It has 112 campuses, which enrol about three million students. All in all, this three-tiered system of California higher education differs in approaches to governance, funding, missions and functions, all which avails ample space to the California State to manage effectively its research universities (Altbach, 2013).

5.6.4 Criterion-referenced university accreditation and career advancement

The findings presented in this study demonstrate that research is a prerequisite for university accreditation and career advancement for university academics in Tanzania (see Appendix M). These findings resonate with the CIPP model guiding this study which maintains that assessment of the requirements necessary for university accreditation and guidelines for university career advancement may help to establish the extent of a country's commitment to the development of a research culture within higher education institutions. Arguably, certain structural interventions, such as the institution of a national research policy, are necessary initial steps for cultivating a research culture in a country's higher

education system. Nonetheless, behavioural reinforcement mechanisms are imperative in enforcing compliance with the research policy statements to evolve a sustainable culture of research (Leathwood & Read, 2013; Cloete *et al.*, 2015; Nguyen, 2016). Therefore, the use of an excellent research track record as a prerequisite for university career advancement and institutional accreditation is a strategic policy initiative practised in many countries in order to enhance university research (Wadesango, 2014; Nguyen, 2016). Some countries, largely in the developed world, have even instituted research policies that favour the funding of universities based on their research reputation.

South Africa, Hong Kong, Japan, China, New Zealand, the Netherlands, the United States, Australia, and the United Kingdom are some of the countries that have used to good effect the research excellence policy to convert many of their teaching-dominated higher education institutions into successful research universities (Edgar & Geare, 2013; Leathwood & Lead, 2013; Cloete *et al.*, 2015; Kruss *et al.*, 2015). The research universities in these countries have grown into successful knowledge producers, which has not only improved the quality of education delivered but also attracted colossal sums from teeming numbers of international students and resulted in the strengthening of university-industry partnerships for knowledge valorisation.

Although research excellence of the university is a prerequisite for full accreditation in Tanzania, the findings of this study show that this criterion was often taken for granted when vetting universities for accreditation. The TCU appears to compromise the policy standard geared towards fostering research in the country, in a bid to increase the number of universities. As a result, some universities with a poor research base and track record ended up getting accredited.

Tanzania's neglect regarding the strict enforcement of compliance with viable research policies goes contrary to the country's overriding need to improve research performance and status in its universities. With this laxity, the country's efforts to increase the production of abundant scientific knowledge and a highly skilled workforce could also be undermined. Nakweya (2016) found that Tanzania is now experiencing a higher skills gap than the rest of nations in sub-Saharan Africa, and the gap is greater at higher skills levels, which are often

developed at tertiary education. In light of this, having a large number of universities in Tanzania whilst compromising compliance with research policy guidelines is detrimental to the country's concerted efforts to boost research productivity and the provision of quality and relevant education in its universities, which aspire to become research-intensive universities.

Alternatively, the country could differentiate between teaching and research universities, without destabilising the research element of those part of the latter category. Universities with low research productivity could operate as teaching-only universities and those with excellence research productivity could be designated as research universities, a model that has brought success in many high-income and emerging economies (Fenwick, 2012; Russel Group, 2012; Edgar & Geare, 2013; Hladchenko *et al.*, 2016).

5.6.5 Uniform funding structure

The government of Tanzania, as indicated in the study's findings, use mainly a block funding method or direct institutional allocations to provide funds to the country's universities. Under this direct institutional allocation, there are two types of funds allocated to universities: development and recurrent. The development fund is allocated for investment in, for instance, infrastructural development, and should strictly be used for such purposes only. The recurrent fund, on the other hand, facilitates the payment of bills, teaching activities, staff development and, if possible, research. This implies that research does not have a special allocation. The situation is not helped by the national research policy that seeks such university and general research funds to be organised at the national level. In this regard, Tanzania's higher education policy stipulates: "[C]riteria and guidelines for funding HEIs and apportioning research or project funds need also to be institutionalised and co-ordinated at [the] national level" (URT, 2010a, p.15).

Research in universities needs an enabling infrastructure and machinery for it to effectively develop. This normally relies on adequate funding. However, the findings of this study attest to university research receiving little targeted funding consideration. These findings are not new in many of the studies reported from developing countries; nevertheless, they are contrary to the

findings reported in most of the developed countries. Unlike developed countries, which are relatively more supportive of university research (Russell Group, 2012; Edgar & Geare, 2013; Hladchenko *et al.,* 2016; Pinheiro & Pillay, 2016), the existing structure of higher education in developing countries, such as Mauritius, Namibia, Pakistan, Vietnam and the Philippines, is described as being more supportive to university teaching than research (Lodhi, 2012; Trotter *et al.,* 2014; Cloete *et al.,* 2015; Nguyen, 2016). In these developing countries, teaching has benefited from the greater financial support, rather than research, despite the expectations for these countries' academics to get involved in research, and for their universities to compete internationally in terms of cutting-edge scientific knowledge exchange and transfer.

The use of a block funding method or direct institutional allocations to provide research funds to Tanzania's universities, as shown in the findings, can retard the development of a sustained research culture in the country. Given the nature of block funding that often "leave the HEI free to decide on their use within the institution depending on their priorities" (Jongbloed and Lepori, 2015, p.441), the decision of whether to fund research within Tanzanian universities is usually determined by the senior university leaders' personal affinity to, and prioritisation of, research – and how much funding is not consumed by the more urgent daily operational needs. Even then, sometimes the senior university leaders find that their hands are tied, as the block funding received from the government is simply limited to a small amount. In the face of dwindling funding for Other Charges (OC) or recurrent expenditure, Tanzania's public universities are hard-pressed to spread thinly the financial resources available, which often results in the explicit undermining of research-based activities.

Despite the problems of research funding being a global affair, there are variations specific to each country regarding the allocation of research funding in universities, which may accentuate the problem (Olsson & Cooke, 2013; Jongbloed & Lepori, 2015). In this regard, the way in which research funding is administered within Tanzania, as part of a lump sum allocated to universities, has placed the country in a (research) funding trap, as universities are rewarded for what they are and not for what they do or how well they perform,

particularly in relation to research. In other words, universities within Tanzania receive an equal level of funding regardless of the differences in research performance; i.e., some universities are more productive in research-based work than others, and yet they are subjected to similar funding allocation.

Direct institutional allocation is the cheapest system of university funding, and is a good mechanism for encouraging bottom-up input, and additionally is an instrument that can be used for promoting the institutional autonomy of planning for better research competences that an institution may require (Olsson & Cooke, 2013; Jongbloed & Lepori, 2015). Nonetheless, this type of funding allocation is flawed because it arguably encourages idleness among researchers and institutions and disconnects university research from specific societal needs and objectives (Olsson & Cooke, 2013; Shin and Lee, 2015), which is detrimental for a country like Tanzania that envisages to advance from a status of 'less developed' country into a respectable 'middle-income' country by 2025, as per National Development Vision 2025.

As shown in the literature review of this study, some countries such as South Africa, New Zealand, Hong Kong, Australia and the United Kingdom, have diversified their modes of funding universities to reward universities for what they are (e.g., block funding) and what they do in relation to research (research performance-based funding), in order to mitigate the limitations brought about by block grants and broaden the financial base of their institutions. The diversification of the institutional sources of income in the foregoing countries has broadened the financial base of their institutions and enhanced their capacity to fund research activities.

Although empirical evidence is less conclusive with regard to which funding model delivers the best performance in research (Jongbloed and Lepori, 2015), the logic behind competitive research funding is that researchers and institutions compete with one another in order to secure funding and at the same time become committed to improving their research excellence and performance (Olsson and Cooke, 2013; Shin and Lee, 2015). South Africa, for example, has become the leading African country with the highly regarded universities, researchers and economy, as it is home to one-third of the total contributions that Africa makes in global scientific research outputs (UNESCO, 2015; Cloete et

al., 2015). Pinheiro et al. (2015) aptly comment "[t]his leading role in research in Africa is not only a result of the country's strong HEIs (compared to others on the continent) but also the strong role of the state in steering research productivity, mainly through funding mechanisms" (232), which, among others, rewards South African universities for research-based publications and postgraduate student outputs.

In conclusion, a discussion and interpretation of the findings surrounding the key themes which were identified from Tanzania's higher education policy analysis has been provided in this section. The discussion established that there is a discrepancy between the elevated status of research in national policy documents and the events on the ground regarding funding, managing and promoting research in Tanzania's higher education institutions.

5.7 Summary and conclusions

This chapter has presented the findings and discussion pertaining to the first research question on the influence of Tanzanian higher education policy context on the development of a research culture. The findings and discussion have shown that the way in which research is perceived in the context of Tanzania's national higher education policy is different to the kind of energy and expenses expended on developing research within higher education institutions. Research secures a high status in the national policy agenda in Tanzania, yet the appropriate structural and behavioural mechanisms are not in place to ensure the practical development of research in Tanzanian universities. For university research to prosper in Tanzania comparable to middle and high-income countries, the country needs a thorough review of its higher education policies and a careful institution of viable strategic actions that could enhance the cultivation of a successful research culture. Having explored the influence of national policy initiatives on fostering research in universities, the following Chapter 6 presents the findings and discussions concerning the approaches that have been adopted by Tanzania's higher education institutions to develop a research culture.

6 The Role of Tanzanian Universities in Developing a Research Culture

6.1 Introduction

The presentation and discussion of the findings in this chapter attempts to answer the second research question regarding the role of Tanzania's higher education institutions in developing a research culture. The chapter begins with a presentation of the findings and is followed by a discussion of these findings in a separate section. In general, the chapter is divided into four sections. This section (6.1) introduces the chapter, followed by section 6.2 which presents the findings. The discussion of the findings is presented in section 6.3, followed by a summary and conclusion of the chapter in section 6.4.

6.2 Approaches to developing a research culture

The analysis of data related to the approaches that the four universities under study employ to develop a research culture (see Chapter 4), resulted in five major themes (see Table 6.1). Each of the key themes is presented in the following subsections and graphically summarised in Figure 6.1 (p.177).

Table 6-1 Strategies Used to Develop a Research Culture in Tanzania

Key themes	Categories or sub-themes
Structural and procedural research development	• Research offices and positions • Research guiding tools e.g., research ethics and intellectual property policies • Criterion-referenced career advancement policy
Desirable research behaviour reinforcement	• Pecuniary incentives • Postgraduate research supervision • Relegation
Research capacity development	• Postgraduate research and training • Undergraduate research and training • Professional development courses and seminars
Research dissemination	• Paper publications • Academic conferences and workshops • Research exhibitions
Research collaboration and networking	• Local and international networking • Experts and expertise exchange • Short-term academic staff training

Source: Field Data

6.2.1 Structural and Procedural Research Development Approach (SPRDA)

The Structural and Procedural Research Development Approach (SPRDA) has formed a commonplace approach to developing a research culture in Tanzanian universities. The SPRDA involves establishing research offices, developing instruments for good practice in research (Research Ethics Policy and Intellectual Property Policy), and incorporating research into the university mission, academic staff career advancement path and promotion criteria. All of the four universities under review had instituted research offices entitled the 'Directorate of Research and Publications' with officials responsible for facilitating and recording university research. Exceptionally, one public university which, as well setting up the Directorate of Research, had gone further in establishing the Deputy Vice-Chancellor (DVC) for Research – adding up to the two DVCs already in existence – (one for academic and the other for finance). The establishment of the DVC-Research position at this institution is borne out of the university's recognition that research needs greater focus. A policy document reviewed at this institution commented:

> Strengthening of research also involved a restructuring of the Directorate of Research by creating a new office of the Deputy Vice Chancellor, Research… These efforts are expected to create a better and more conducive environment for the academics to conduct research and disseminate results while keeping with global trends and standards. (Research Site 3 Document, 2013, p.ii).

Academic staff participant also added:

> The [Research Site 3] recently introduced the office of DVC (Research). This is deliberate to try to raise the profile of research activities at the university. (Academic Staff: RS3)

Similarly, universities under review have developed instruments for good practice in research, such as Research Ethics Policies and Intellectual Property (IP) Policies. These instruments were purposely developed in order to provide guidance in conducting ethically informed research, highlighting national priority research themes, and protecting the researchers' and universities' intellectual assets and efforts. Research and IP Policies, however, existed only in public universities under study. The private universities, in contrast, had yet to develop

research and IP policies. Participants in this study attributed the absence of research and IP policies in private universities to the nascent nature of these institutions, as they now mark a decade since they were established (see Chapter 5).

Furthermore, all of the four universities under study had integrated research into their respective university missions (see Table 5.3), academic staff career advancement path and promotion criteria. The academic staff career structure consists of six ranks: Professor; Associate Professor; Senior Lecturer; Lecturer; Assistant Lecturer; and Tutorial Assistant. Rising through the ranks – for instance, moving from Tutorial Assistantship, which is the lowest rank to Professorship, which is the highest – involves undertaking research and publishing research results (see Appendix M). The significance of this is reflected in responses from an interview participant:

> In the promotion criteria, there are some points for research and publications, teaching and so forth. So, academic staff must have attained those points to be promoted. (Director of Research: RS6)

This response suggests that research constitutes an essential prerequisite for members of academic staff to advance up the career ladder. University guidelines for the recruitment and promotion of academic staff also indicate that the research required for promotion is primarily in the form of publications in refereed journals, and in the form of books, book chapters, dictionaries, consultancy reports and published conference papers (see Table 6.2).

Table 6-2 Ratings for the Quality of Research Outputs in Tanzania

Letter Grade	Qualitative Evaluation of the Publication	Peer-reviewed journal articles & Published Conference papers	Chapters in a Book	Consultancy reports	Scholarly Books, Dictionaries and Patents	Books for Lower levels, Published Book Reviews, Conference Papers, Case Reports and Extension Material
A	Excellent	1.0	1.0	0.5	6	0.5
B+	Very Good	1.0	1.0	0.5	5	0.5
B	Good	0.5	0.5	0.25	3	0.25
C	Poor	0	0	0	0	0
D	Very Poor	0	0	0	0	0

Source: Field Data

Table 6.2 presents ratings for the quality of the research outputs for various publications required for promotion. Journal articles and book chapters have an

equal rating (0-1 point), similar to books and dictionaries, which have an equal rating (0-6 points). Ideally, equal ratings for different categories of these publications could mean that they are being accrued equal status; however, in reality, journal articles are given a higher status (see subsection 6.3.2). This was attributed to the fact that journal articles tend to pass a rigorous peer-reviewing process when compared with other types of publications.

6.2.2 Desirable Research Behaviour Reinforcement Approach (DRBRA)

The Desirable Research Behaviour Reinforcement Approach (DRBRA) emerged as another approach to developing a research culture in Tanzanian universities. The DRBRA approach involves using different carrot-and-stick tactics in order to reinforce desirable research behaviour among the members of the university research community, including academic staff. Approaches reported in the conduct of this research include career promotions, managerial position promotions, sabbaticals and postgraduate (PhD) research supervision, as well as pecuniary incentives and relegation.

6.2.2.1 Career promotions

All of the four universities under review require their members of academic staff in different designations to have a number of refereed publications for them to rise through the career ranks (see Appendix M). Climbing from Tutorial Assistantship to Assistant Lectureship, for example, requires one to possess a research-based master's degree. In order to climb from Assistant Lectureship to Lectureship, one has two options: either to possess a PhD (implicitly based on research) or a minimum of three refereed publications since the last promotion. From Lectureship to Senior Lectureship requires one to possess a PhD and a minimum of four refereed publications since the last promotion, while from Senior Lectureship to Associate Professorship requires a PhD and a minimum of six refereed publications since the last promotion. Finally, promotion from Associate Professorship to Professorship requires a PhD and a minimum of seven refereed publications since the last promotion. In addition, the duration for staying in one designation before promotion to the next level is three years minimum.

The publications required for promotion include journal articles, books, book chapters, dictionaries, consultancy reports, published conference papers and technical notes. These publication types were regarded differently depending on the institution. Unlike technical notes which are viewed less favourably, receive less attention and are not considered for promotion in public universities, journal articles are highly regarded and preferred in all of the universities under study. One could not be promoted if the weight of journal articles in their promotion portfolio is below 50%. The following statements affirmed the requirements for academic promotion:

> If you want to be promoted, you have to publish on the so called recognised journals. (Postgraduate Student: RS6)

The implication is that academics are encouraged to publish in 'recognised journals' as one of the requirements towards their career advancement. It was challenging to get a clear conception of the phrase 'recognised journals'. However, some participants, particularly senior university leaders, maintained that one indicator of 'recognised journals' which universities in Tanzania use is international publishing indexes such as Thomson Reuters' Web of Science and Scopus:

> One is needed to publish under Web of Science where serious journals are listed. (Faculty Dean: RS3)

Participants explained that if one publishes on those journals listed in the international indexes such as Scopus and Web of Science, the expectation is that the quality of their papers is high. Nevertheless, this is not only the requirement, as one's articles have to be subjected to independent review when the person requests for promotion. The promotion may not be secured if one receives unfavourable outcome of the review:

> The papers cannot be approved until they are read by someone who is independent and they are graded. If they are not substantive, one doesn't get a grade that is needed to upgrade someone. (Faculty Dean: RS3)

By and large, findings regarding kind of publications show that only peer-reviewed publications are considered for promotion. The peer-reviewing process is checked in two ways. Firstly, the publications considered for promotion are

mandated to have been published in serious refereed journals (for example, journals listed under the Web of Science and Scopus) or other like-minded publication outlets, both at the local and international levels. This helps to guarantee, at least, that the publications are vetted by experts in one's relevant field before publication. Secondly, publications considered for promotion, irrespective of whether they have passed through a rigorous peer-reviewing process during publication, are also assessed by two independent reviewers, both internal and external to the university. In fact, the use of only peer-reviewed publications for promotion points to what was mentioned earlier (see section 5.5, p.139) about the existence of ambiguous and crude notion of research, and this will be discussed further in the final discussion section (p.178).

6.2.2.2 Managerial position promotions and postgraduate (PhD) research supervision

Managerial positions such as the Faculty Deanship, Directorate of Research, Directorate of Undergraduate and Postgraduate Studies, Deputy Vice-Chancellorship and Vice-Chancellorship are given to PhD holders at a Senior Lectureship and Professorship designations. This is explained in the following statement:

> I was appointed to be an Associate Dean after my promotion to a Senior Lecturer (Academic Staff and Associate Dean: RS3).

Another participant adds this statement:

> To be given students to supervise, a lecturer is supposed to have published several papers and hold a PhD. (Postgraduate Student: RS6)

The implication is that university managerial positions are only given to academic staff members with a high research reputation. Similarly, postgraduate (PhD) research supervisions and sabbaticals are also granted to academic staff primarily with a Senior Lectureship designation and above. Under the sabbatical leave, academic staff members are granted one-year paid leave in order to embark on research.

6.2.2.3 Pecuniary incentives

Pecuniary incentives consist of monetary rewards for the research process and the research outcome or product. Rewarding for the research process involves funding of academics' research proposals or projects with the potential of producing valuable research findings. In order to access such funding, academics are required to send their research proposals or projects after hearing a university call for research proposals. Although financially rewarding the research process was practised by all of the universities under review, the findings indicated the approach to be erratic as it highly dependent on the availability of the research funds. One academic staff member who participated in this study elaborated on this point:

> Two years ago I won the research fund, it was like seven million Tanzanian shillings [equivalent to sterling £2692]. To-date, I have not received that money. Next time when the university announces a call for proposals, I will be reluctant to respond. (Academic Staff: RS4)

This implies that monetary research rewards were inadequate and in some cases, they were not reliable. Academic staff could not be sure whether or not the following year they are going to get the funding. As such, the unreliable source of research funding resulted in a delay in releasing the funds for academic staff members to accomplish the accepted research projects. Such situations discourage members of the university research community to take university calls for research proposals seriously.

Financially rewarding the research outcome involves providing monetary rewards to research active academics, through their publications. This approach was consistently practised by only one public university under review. This university rewards its academic staff for their research productivity every year during convocation. The rewards were based on research-based publications such as journal articles, books, book chapters and technical notes – published in a year, regardless of the number of authors (single-authored or co-authored) or position of the author (first or second) in the publication. The prizes ranged from three hundred thousand Tanzanian shillings (equivalent to sterling £115) for each journal article or a book chapter to seven hundred thousand Tanzanian shillings (equivalent to sterling £269) for a book or technical notes or teaching

compendium. The more publications one possessed in a year the greater the sum of money one would receive. One member of academic staff boasted to have obtained a publication prize of two million Tanzanian shillings (up to sterling £800) in a year.

The awarding ceremony for academics with high research output in this institution went in tandem with recognising the best research active Faculty or School in the year. Again, the best research active Faculty in this institution was reported to have been awarded up to 15 million Tanzanian shillings (equivalent to sterling £5769) in the year. This amount was not meant to be shared among the Faculty's own academic staff. On the contrary, it was intended to facilitate or support the Faculty's research activities. At the Faculty's discretion, a call for research proposals can be issued, and up to three outstanding and most promising research projects can be funded using the prize money. The following statement explains more on this:

> Apart from individual members of academic staff, we also award the Faculty or School that has been leading in terms of research activities. The winning Faculty or School is given 15 million [Tanzanian shillings] to fund further research activities. (Director of Research: RS4)

A financial reward for active researchers and Faculty at this institution cultivated the culture of research. After the introduction of this pecuniary incentive system in 2010, the number of publications at this institution has increased significantly. The 2013 annual report of this institution, for example, indicates that the number of books rose from five in 2008/2009 to 58 in 2012/2013, the number of consultancies grew from 25 in 2008/2009 to 115 in 2012/2013, and the number of journal articles increased from 36 in 2008/2009 to 198 in 2012/2013 (MU, 2013, p.21). The participant academics from this institution under study attributed this research success to the institution's pecuniary incentive.

6.2.2.4 Relegation

There were also punitive measures, as stated earlier, for dealing with academics who were inactive in research; one of the measures includes relegation. In this situation, members of academic staff may stay in their current designation for

the rest of their career life if their publication records are minimal. Another punitive measure is re-categorisation, where inactive researchers are relegated to administrative positions receiving lower salaries. Members of academic staff explained during fieldwork that some of their colleagues have stayed for 10 years in one position while they were supposed to be promoted after every 3 years if they could have possessed adequate points from publications:

> There is no way you are going to progress from being a lecturer, for example, to a senior lecturer, and eventually to professor without publishing and that's why those people who have not done that over the years have either retired without being promoted or they have been re-categorised. (Academic Staff: RS3)

This also implies that academic staff lacking adequate research outputs were prone to missing other fringe benefits associated with career promotion such as a managerial position, access to a sabbatical and doctoral research supervision as stated previously – all of which accrue to the individual's academic reputation, professional development and financial benefits.

6.2.3 Research Capacity Development Approach (RCDA)

Provision of research-based undergraduate, postgraduate and professional development programmes was the main approach used to realise institutional research capacity development. Research is made part and parcel of university programmes. To begin with, two private universities under study were found to integrate research into undergraduate programmes, wherein a research dissertation formed the criterion for a student to be awarded a bachelor degree. In their final year, every undergraduate student is allocated a supervisor to oversee research proposal development and finally the production of a dissertation under the tutelage of the academic staff. This is demonstrated in the following statement:

> It is a requirement here at [RS5], that every third-year student must undertake research. There is also an opportunity for study tours in some courses which thereafter we insist students to produce project reports which are then assessed and awarded marks. (Academic Staff: RS5)

Participants in the two private universities under study, particularly members of academic staff, reported that the undergraduate research supervision in their

institutions is as rigorous as postgraduate research supervision. One university in this category also introduced an undergraduate student journal specifically for undergraduate students to publish their papers. Academic staff are the chief editors of this biannual journal which, during data collection, was in its sixth issue.

Moreover, all of the four universities under study were running various Master and doctoral programmes. In these postgraduate programmes, students were attending research courses before beginning to write their dissertations and theses. In addition to research training, there were also regular postgraduate seminars during which students presented their research proposals, research reports and papers. In one public university, research training or coursework was a mandatory step prior to embarking on research proposal development and dissertation writing. In the same public university under study, a peer-reviewed research publication (at least one) from one's dissertation or thesis was one of the prerequisites for successfully completing doctoral studies. This is demonstrated in the following statement:

> Research is must to both students and academic staff because for students is one among the requirements for fulfilment of their degree. We do also have seminar and workshop on research here at [RS6] both for staff and students. (Academic Staff: RS6)

Although the institutions under review established various postgraduate programmes as noted in the foregoing paragraph, Master Programmes dominated the postgraduate training in these universities. Two universities under study, for instance, had a total of only 14 doctoral candidates from 2006 to 2013, while the figure for Master students stood at 6,700. This poses a question as to whether such a huge discrepancy between Master and PhD students can create a good foundation for the country's human personnel imbued with advanced research and analytical skills to function both in the university and non-university sectors.

6.2.4 Research Dissemination Support Approach (RDSA)

The Research Dissemination Support Approach (RDSA) involves supporting academic staff in disseminating their research outputs. Under this approach, universities under review financed in-house journal publications from various

Schools and Colleges. This is illustrated in the following comments from interviewees:

> When we launched our *Law Journal* in 2011/2012 we got our capital from the university. They financed the launching of the journal, and we promised them that after two years we are going to pay for publication expenses ourselves. (Faculty Dean: RS6)

A similar comment was made by another participant:

> The first two volumes of our education journal were funded by the university. Then the university said that we should sponsor the publication of the next coming volumes… after we have collected the money from selling the first two volumes. (Associate Dean: RS5)

These statements suggest that universities under review support financially the dissemination of research findings and outputs, however, the budget austerity tends to limit the financial support that these universities extend to RDSA. Only a few starter issues or volumes of newly-instituted in-house journals were financed.

Moreover, the RDSA involves financially supporting and/or granting leave for one to participate in research dissemination gatherings such as conferences and workshops conducted at both local and international venues. Similar to the financial support extended to journal publication, academic staff members were rarely financed to attend research conferences and workshops. A permit option to attend research conferences and workshops was, however, available for any member of academic staff who could be self-sponsored or secure sponsorship elsewhere.

Furthermore, universities under study participated in an annual entrance-free national exhibition of science and technology organised by the Tanzania Commission for Universities. This national exhibition targets universities and research institutions in the country. In this exhibition, universities display their research publications and innovations and market themselves to the public. During fieldwork, a Director of Research at one institution stated that:

> Our university participates in annual exhibitions of science and technology where universities are invited to go and display their innovations, ongoing research and publications. (Director of Research, RS4)

As this exhibition usually involves all of the universities and research institutions in the country, it creates a venue for university academics and researchers to interact with one another. This interaction was considered by the participants of this study to stimulate mutual understanding and networking, as well as promoting the forming of multidisciplinary research projects:

> There, universities do exchange their knowledge and create mutual understanding and sometimes this understanding results into multidisciplinary research. (Director of Research, RS4)

Similarly, some universities under study organise research exhibitions at the institutional level that allowed various academics and students to display their research work and offered to present their research findings or papers. Exhibition materials at these institutions came from the research output undertaken by the institutions' research community (students and staff). In some universities under review, exhibits were restricted to research outputs produced over the past ten years.

Whereas research exhibitions in some participant universities in this study are haphazardly conducted, one public university has introduced a yearly one-week research exhibition entitled *Research Week,* for the university research community to display and present their research outputs. Each annual research week had a specific theme. The theme for 2015/2016 (during fieldwork) was *Utilisation of Research Results for Improved Livelihood* and the theme for 2016/2017 was *Research for Industrial Development in Tanzania*. The target group for the Research Week included secondary school students and teachers, the host institution alumni, donors, policy-makers, government officials, industrial partners, non-governmental organisations (NGOs) and R&D institutions.

The Research Week events at this institution were conducted at two levels, namely at the unit level (College/School level) and at the University level. The events at the unit level were conducted two months before the University level event. At both levels, the Research Week, among other things, constituted

displaying and presenting research work through seminars, debates, symposia and discussions. Other activities include touring research facilities such as laboratories, studios and research sites. The Research Week also constituted rewarding excellence research performance to both individual staff or student and the research groups or faculties. One interviewee elaborated on this further:

> There are some awards to recognise outstanding performance. Individual researchers, research groups, research centres or departments compete at Unit level exhibitions for the 1st, 2nd and 3rd winner in positions. The Unit level winners are then selected for the University-level competition. (DVC Research: RS3)

Parallel to the national exhibition of science and technology, institutional research exhibitions create a venue for disseminating research findings, promoting university research and marketing individual researchers. The exhibitions also function as a platform for informing educational stakeholders and the general public on the rigour and requirement of university research activities and the significance of university research in serving the community and contributing to national and regional economic prosperity.

6.2.5 Research Collaboration and Networking Approach (RCNA)

Research collaboration and networking served as another common approach to the development of a research culture in Tanzanian universities. All of the four universities under study reported on collaborating and networking with other higher education institutions at both the local and international level with the aim of elevating their research profiles. Statements from interviews emphasise the following:

> The university continues to engage in international collaborations and research networks including global commodity chain research networks in agro-industrial investments and trade, environment and energy resources and entrepreneurship and innovations. The university is working hard to make the best use of these collaborations in enhancing its capacity in training and research. (Director of Research: RS4)

A review of universities' websites, prospectuses and annual reports showed that these institutions were collaborating and networking with several universities

from all over the world (see Table 6.3, p.175). Table 6.3 (p.175) indicates that each university under review has established international collaborations.

Table 6-3 International HEIs that Collaborate with Tanzanian Universities

Participant university	Collaborating institutions/ Development partners
Research Site 6	• Collaborates with a number of universities in Europe and the United States including the University of Helsinki and Vestal. • Member of the Association of Catholic Universities and Higher Institutions of Africa and Madagascar (ACUHIAM), and the Commonwealth Association of Polytechnics in Africa.
Research Site 5	• Collaborates with several universities including the University of Helsinki, and Abo Akademi (Finland), Erlangen Nurnberg (Germany), Ohio University and Columbus University (USA).
Research Site 4	• Collaborates with more than 36 academic institutions in Africa, America, Asia, Australasia and Europe. Recent ones include Chinese universities: Dalian University of Science and Technology, Tongji, Shanghai Jiao Tong, and Mianyang Normal University. • Collaborates with development partners such as Royal Norwegian Government, DAAD, DANIDA, VLIR- UOS, DFID, NUFFIC, SIDA, JICA, UN agencies, and the World Bank.
Research Site 3	• Collaborates with more than 40 universities in Africa, America, Asia, Australasia and Europe, such as the University of Glasgow (UK), Shanghai Jiao Tong University (China), Ohio University (USA), the University of Helsinki, and Abo Akademi (Finland). • Collaborates with development partners such as the World Bank, Royal Norwegian Government, UN agencies, DFID, DAAD, SIDA, DANIDA, VLIR-UOS, NUFFIC, and JICA.

Source: Field Data

The main objective of these collaborations is to uplift the institutions' research profiles and increase the academic staff's reputation as well as professional visibility. Indeed, these research collaborations and networks improve the exchange of experts and expertise and sharing of learning materials and infrastructures such as IT services and library. The collaborations contract entered, for example, between some Tanzanian universities (including those under review) and Zhejiang Normal University, People's Republic of China, culminated in the launching of the Confucius Institute. This statement explains:

> The most collaborations we have here are international, for example, Copenhagen, Belgium, China etc., although we are also open to local institutions. We rely mostly on outside universities because they have adequate fund and expertise… But again, there are people from our institution who get opportunities to go for doctoral studies in these international universities. (Director of Research: RS4)

Another participant supported this statement:

> We have entered a record number of collaboration contracts with respectable universities worldwide that will see an increase in research collaborations, student-staff exchanges, sabbaticals, mutual assistance in establishing new programmes and exchange of information and publications. (Academic Staff: RS3)

The implication is that RCNA constitutes a significant approach to developing a research culture and uplifting the participant universities' research profiles, not only locally but also internationally. The RCNA enhanced research skills through short-term and long-term academic staff training and collaboration in international research projects. In one institution under review (RS4), the RCNA, for instance, resulted in five jointly-run Master programmes between this local institution and four international institutions, sponsorship opportunities for 15 Master and 12 doctoral studies and four large international research projects, between 2012 and 2014. Despite the achievements attained so far, the universities under review reported facing some bottlenecks to utilise effectively research collaborations and networks, which included inexperienced members of academic staff regarding bidding for research projects, an undeveloped intellectual property system and poor university-industry or business linkage.

In summary, this section has presented the findings regarding the approaches used to develop a research culture in Tanzanian universities (see Figure 6.1). The major approaches presented thus far include creating structures and basic infrastructures for research (e.g., personnel management policies and research guiding tools), personnel training, collaborating and networking with local and international institutions and disseminating research-based knowledge. These approaches are discussed in the following section (6.4).

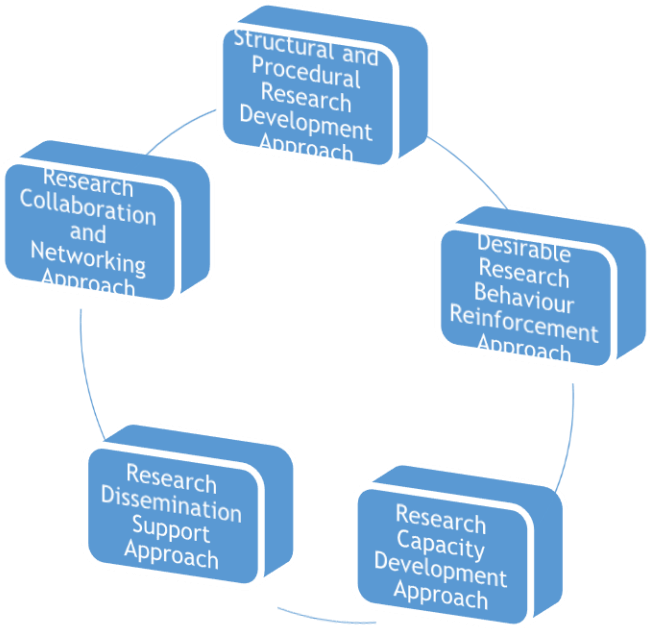

Figure 6-1 Approaches Used to Develop a Research Culture in Tanzania

6.3 Discussion of the findings

The discussion of the findings in this section follows the same order used to present the findings in section 6.3, in order to maintain consistency and clarity.

6.3.1 Structural and Procedural Research Development Approach (SPRDA)

Structural and procedural research development initiatives, such as the establishment of research offices, research centres and criterion-referenced staff management policies, are necessary indicators of an institution's seriousness towards substantially developing research (Altbach, 2013; Cloete *et al.*, 2015; Nguyen, 2016). This line of reasoning is supported by the present study, as the findings show that creating research offices, such as the DVC-Research and the Directorate of Research and Publications, introducing research guiding tools, such as Research Ethics Policy and Intellectual Property Policy, as well as integrating research into university mission and career advancement path, were major structural approaches established to develop a research culture in Tanzanian universities.

These findings concur with many other studies. For example, in South Africa, Cloete and Bunting (2013) found that all of the five universities studied had research offices, research centres, research-based career paths, research-led university missions and Intellectual Property Services. These South African universities had also created a two-tier system of leadership with regard to the university's core functions in order to manage teaching and research separately. The research tier consists of the Deputy Vice Chancellor (DVC) at the top, the Director of Research in the upper-middle, the College or School or Faculty Dean for research in the middle, and the Departmental or Academic research leader at the bottom. The teaching tier follows the same order as the research tier, as there exists the DVC for teaching and other successive positions or offices. Taylor (2006) and Hladchenko *et al*. (2016) report a similar trend in the United States and OECD countries.

Contrasting findings emerged in studies by Dessie and Mesfin (2013) in Ethiopia and Nguyen (2016) in Vietnam. Both studies found a presence of a one-tier system of university leadership overseeing both teaching and research, a lack of clearly-defined career tracks and professional ranks for academic staff and the existence of muddled research policies.

Universities across the world develop research structures purposively to create a seedbed for cultivating, guiding and managing university research. Stufflebeam's CIPP framework also indicates that the introduction of practicable research structures and procedures may lead to a pervasive research culture among the members of the university research community. Although Tanzania has developed some of these research structures and procedures as the current research findings illustrate, reservations do exist on whether the created structures would have a significant impact on cultivating a successful research culture in the country.

Although it is currently a global trend to manage teaching and research separately at universities through a two-tier system of university leadership (Hazelkorn, 2005; Taylor, 2006; Cloete & Bunting, 2013), a large percentage of the existing leadership structures in Tanzanian universities, as shown in the findings, do not subscribe to this two-tier leadership profile. As the study's findings reveal, only one university under review has recently introduced the

DVC office for Research. Even though the DVC Research office lacks a broad-based system of support from the bottom level because the successive offices, the offices of the College or School or Faculty Deans, for example, operate under the one-tier leadership system as both teaching and research are conjoined.

The establishment of only the DVC – Research office at the top leadership level conforms to standardisation or centralisation orientation, as opposed to the diversification of research management at the university setting (Cloete & Bunting, 2013). Standardisation implies that research procedures and structures are centrally developed and dominated, which many find to be unhealthy for the development of a sustained research culture. Diversification implies a commendable level of intra-institutional autonomy where organs at the bottom level, for example, Faculty or Department, are also involved in developing and controlling research standards and structures (Olsson & Cooke, 2013; Cloete & Bunting, 2013; Hladchenko *et al.,* 2016). In this regard, it is essential for Tanzanian universities to subscribe to the two-tier leadership profile in order to enhance the management of research and teaching separately.

The two-tier system has been successful in elevating the research portfolios of South African universities and improved the standard of socio-economic development of a nation. South Africa has the most developed economy in Africa and it is the only African nation with a large number of the world's best universities as ranked by *the 2016 Times Higher Education (THE) World University Rankings*. In this THE world rankings, South Africa features six universities while its six African counterparts in the list are represented by only one up to three universities (Bothwell, 2016). Given the limited quantity and quality of research outputs produced by Tanzanian universities, Tanzania has hitherto never featured in the reputable *THE World University Rankings* since the appearance of its maiden issue in 2004.

Furthermore, research structures created in Tanzanian universities, as shown in the findings, may not significantly cultivate a successful research culture, because they have been borrowed from the global trend without knowing exactly what the structures ought to do. As the findings of this study indicate, the structures were created without being empowered with viable policies to

strengthen and manage their functions, particularly in the local context, under which the research structure is required to operate. What remains unclear is what the research structure should actually be doing, and how compliance with its function could be enforced. Despite the presence of the Director of Research offices for many years, all the universities under study, for instance, lacked a comprehensive solid repository regarding research matters, particularly in the quantity and quality of research which has been conducted in the institution, key sources of research fund and the impact of the university research in the society. This suggests that some structures, which have been introduced to promote research in universities, have remained as aspirational in the university guidelines and policies rather than a reality on the ground.

It is worth mentioning that borrowing policies and structures of the successful universities is a trend for many HEIs worldwide (Olsson & Cooke, 2013; Cloete *et al.*, 2015; Hladchenko *et al.*, 2016). However, mimicking the best practices from the successful universities without integrating them with the contextual factors and local culture is a preparation for adversity, as doing so may lead to a disconnected state of affairs regarding the direction in which progressive university research should head.

6.3.2 Desirable Research Behaviour Reinforcement Approach (DRBRA)

Behaviour reinforcement mechanisms are central to encouraging research activity within universities. Accordingly, universities in Tanzania have institutionalised different incentive schemes in order to reinforce research behaviour among the members of the university research community. The major incentive reported in this study is career-advancement based on the research performance of individual academic staff. Another incentive schemes are managerial positions, pecuniary incentives, sabbaticals, postgraduate (PhD) research supervision and relegation. These findings are consistent with the Stufflebeam's (1971) CIPP framework guiding the present study. The CIPP framework emphasises that various forms of research behaviour reinforcement mechanisms – such as rewarding active and outstanding researchers, systematic tracking of academics' research behaviour and monitoring of research in the

university career – may stimulate members of academic staff to undertake research and bolster institutional research culture.

The findings also corroborate with previous research of Cloete and Bunting (2013), Quimbo and Sulabo (2013) and Nguyen (2016) conducted in South Africa, the Philippines and Vietnam, respectively. These studies found a presence of various incentives to promote university research, such as research performance-based promotion and various forms of monetary rewards.

Incentives have been found to be capable of fostering a culture of research in universities; however, this is highly dependent on the kind of incentive and how it is administered. The dominant incentive used in Tanzanian universities is promotion based on research performance. Pecuniary and other forms of incentives were found to be erratic, as they are highly dependent on the availability of research funds and the university administrators' affinity for research. Despite being reported as the dominant and reliable incentive scheme to reinforce research behaviour amongst the university research community in Tanzania, research-based promotions were found less effective. In fact, research-based promotions, as currently used in Tanzania, lack stern measures capable of handling inactive researchers who – for one reason or another – opt out of engaging in research throughout their career.

Within the universities under study, the standard duration for one to stay in one designation is three years, and there is a provision in the institutional policy guidelines that a member of academic staff who have overstayed in one designation for about six to nine years without promotion should seek alternative employment elsewhere or be re-categorised. The provision notwithstanding, the findings of this study show that there were cases wherein the majority of academic staff members in the universities under review remained in the positions of Lectureship, Senior Lectureship and Associate Professorship for more than 15 years, due to a lack of adequate research outputs and subsequent publishing of their findings in peer-reviewed journals.

Senior university leaders involved in this study admitted that dismissals associated with the lack of research productivity of individual academics are rarely exercised due to severe academic staff shortages. Usually, faculty

members who are inactive with regard to research tend to stay in their current academic position throughout their career life until they reach retirement, concentrating only on teaching to earn their salary. This is contrary to the practice of many of the universities in the developed world, particularly research universities, where research and scholarly productivity is an integral part of tenure-track positions. For example, in the United States, one cannot get tenure without first accomplishing research and scholarly productivity in a period of six years.

Tanzanian universities are concerned about losing their academics through summary dismissals amidst academic personnel deficit. As some academics that often fall into the trap of lacking adequate research outputs for upward mobility are associate professors and senior academics with a doctorate, senior university leaders are considered imperative to retain these academics to teach students, even when such instructors remain inactive in research. Such a course of action tends to overlook the fact that a culture of research cannot develop in places lacking penalties for research unproductivity (Lewis & Simmons, 2010; Shin, 2013; Altbach, 2013; Nguyen, 2016; Hladchenko *et al.*, 2016). Such a course of action could also entertain and attract more passive researchers to higher education, which requires vigorous and sophisticated individuals who should engage in knowledge production and dissemination to spearhead the country's development.

In academic institutions, research has been found to be positive not only in enhancing the stature of the academics, but also the quality of their teaching and learning, which in turn translates into innovation for both teachers and students, and ultimately the cycle of knowledge carries on in a continuum (Healey *et al.*, 2010; Hajdarpasic *et al.*, 2013; Teferra, 2016). As such, the unintended outcome of retaining inactive researchers is that the higher standards required of such universities to promote research-informed and research-led teaching, as well as making research an integral part of their existence, end up being compromised. In this situation, Tanzanian universities may consider establishing teaching positions where inactive researchers could be explicitly identified and relegated to teaching positions. In this way, universities in the country could be certain of a record of active and passive/inactive

researchers to afford better planning of their academic core functions and avoid the situation as in the present where institutional guidelines and practices generally permit academics to choose an active or a passive research-path without any repercussions on their tenure.

6.3.3 Research Capacity Development Approach (RCDA)

Tanzanian universities, as established in this study, employ the Research Capacity Development Approach (RCDA) in order to enhance the research skills of their university research community. The Research Capacity Development Approach (RCDA) entails integrating research into undergraduate programmes for undergraduate students and instituting postgraduate education and professional development programmes for both postgraduate students and academic staff members. These findings are reflected in previous research which concludes that long and short-term formal research training through classroom courses, research supervision and workshops are common approaches to promoting a research culture in universities (Quimbo & Sulabo, 2013; Cloete *et al.*, 2015; Teferra, 2016). It is, therefore imperative to maintain the provision of advanced training and research at higher education institutions both for undergraduate and postgraduate programmes.

Human resource training from a bachelor degree up to the doctoral level and professional development programmes constitute a viable option for honing research skills of both students and members of academic staff in universities (Quimbo & Sulabo, 2013; Cloete *et al.*, 2015; Teferra, 2016). Despite being considered as a foundation for developing a research culture from the beginning of one's career and during career progression, the Research Capacity Development Approach (RCDA) was insignificantly utilised in Tanzanian universities. Firstly, the universities under study narrowed an opportunity for the majority of undergraduate students to be exposed to research, as only private universities were found to integrate research into undergraduate programmes in Tanzania.

Some of the public universities in Tanzania that had integrated research in the final year of undergraduate programme had abandoned such an orientation because of embedded costs that the university could not shoulder and which the

Higher Education Students' Loan Board (HESLB) was unable to fund as an option. For one large public university under review, one of its units – School of Journalism and Mass Communication – that had maintained the research-based dissertation as a mandatory requirement for all finalist students, was considering phasing it out due to widespread cases of plagiarism and lack of seriousness on the part of students.

As explained elsewhere in this study, the public higher education sector in Tanzania absorbs the biggest share of undergraduate students. It enrols at least 62% of the total undergraduate students (URT, 2013). The implication is that in the absence of research-led undergraduate programmes, particularly in most public universities, many students in Tanzania complete their undergraduate studies without a strong research foundation. This is contrary to other universities in developed and emerging economies, where research is integrated early in the undergraduate programmes to create a solid research foundation for further studies and for the start of one's career (Shin, 2013; Heyneman & Lee, 2013; Teferra, 2016).

Secondly, postgraduate training in the universities under review dominated the research capacity development approach, as seminars and workshops for academic staff as part of their professional research development were rarely conducted. Nevertheless, the postgraduate training that the universities under study largely relied upon is mostly made up of Master's Programmes. During fieldwork, one public university under review had only 13 PhD graduates in an eight-year period, from 2006 (when PhD programmes commenced) to 2013, whilst it had 6,566 graduates of Master degrees between 2006 and 2013. Also, during fieldwork, one private university under review had only one doctoral programme that had enrolled only 2 students, whilst around 500 students were enrolled in various Master's programmes.

The postgraduate enrolment statistics in the universities under study reflect the total national postgraduate enrolment. In 2012, doctoral enrolment in Tanzania stood at 6%, whereas the Master's enrolment constituted 94% of the total postgraduate enrolments (URT, 2013). Interestingly, the number of doctoral students enrolled by all Tanzanian universities in 2012 was one-third of the doctorates produced by only one university in Brazil (Sao Paulo) in 2010.

Tanzania enrolled a total of 822 doctoral students in 2012 whereas the University of Sao Paulo produced 2,400 doctorates in 2010. This implies that the current postgraduate research training model in Tanzania, which enrols a few doctoral students, create a poor foundation for the country's human resource engrained with advanced research and analytical skills.

A shortage of producing doctorates is also experienced in other African universities. In their study conducted in eight flagship African universities, Cloete *et al*. (2015) found that unlike undergraduate enrolments, the institutions involved in their study had a small proportion of postgraduate enrolments. Undergraduate enrolment in 2011 stood at 88% of all enrolments in seven flagship universities, while the University of Cape Town only had an undergraduate enrolment of 70%. Similarly, a larger proportion of postgraduate students were at the Master's level, and "masters programmes overall seem to be focused on professional capping degrees, rather than on training for high-level research. This results in low numbers of masters graduates moving on to doctoral studies" (Cloete *et al.,* 2015, p.29). With this trend, Africa will continue to experience a shortage of skilled and innovative personnel, not only in universities but also in different public and private offices outside of the university setting.

Significantly, research-trained graduates from the university that offers appropriate and adequate research training are positioned favourably in playing a critical role in the advancement of the knowledge-based economy. In this regard, Powell and Snellman (2004) assert: "The key component of a knowledge economy is a greater reliance on intellectual capabilities than on physical inputs or natural resources" (p. 199). Postgraduate programmes, particularly at the doctoral level, are important in developing university lecturers and professors and, thus, enhancing the quality of higher education in the present and for posterity. The doctorate personnel are also required to staff independent R&D institutions and high-tech manufacturing firms, and serve as adjunct to universities. The R&D institutions and manufacturing firms outside of the university domain constitute the main mechanisms for infusing research-based knowledge into industries and community (knowledge valorisation), and ultimately transforming the local economy (Cloete *et al.*, 2015; Hermannsson *et*

al., 2015; Kruss *et al.,* 2015; Hermannsson & Lecca, 2016). In other words, they serve as a bridge between university research and the industry that applies those findings through incubation.

6.3.4 Research Dissemination Support Approach (RDSA)

The findings presented in this study show that universities in Tanzania supported their academic staff in disseminating their research findings, through offering them some funding to support the publication of a few inaugural issues of institutional journals, and permitting academic staff to attend facilitated local and international research dissemination in the forms of conferences and workshops. The dissemination of research findings or knowledge is as significant as their production, and that supporting academics financially to publish their research findings and attend conferences has become the normal practice for many universities across the world (Teferra, 2016; Gaus & Hall, 2016), although the practice may vary according to the context and university's level of funding.

Properly established research dissemination mechanisms in higher education are crucial for getting the scientific knowledge produced at the university to reach the intended audience, in order to contribute towards the country's socio-economic development. In fact, it is a professional duty for a university to disseminate research-based knowledge to the academic society and the larger community, so that the findings can be exploited to facilitate teaching and learning in education institutions and the production of better policies, goods and services in government and commercial organisations (Olmos-Pe˜nuela *et al.,* 2014; Gaus & Hall, 2016), in order to eventually bolster socio-economic development. The dissemination of research results also showcases a university's relevance to the community. It also stimulates new lines of enquiry, and increases the visibility of the university and university research. Moreover, research dissemination intensifies a university's accountability to the public and/or donor funding aimed at developing university research (Olmos-Pe˜nuela *et al.,* 2014; Trotter *et al.,* 2014).

Empirical evidence, for example, shows that major funding agencies in the United States, the European Union and the United Kingdom have established a mandate for all the university research produced under their sponsorship to be

made publicly available through open-access – freely available on the internet and through university libraries (Trotter *et al.,* 2014; Nobes, 2016). The open access mandate intends to increase the likelihood of university research knowledge shaping academic disciplines and percolate through to policy makers, industries and civil societies who can leverage the knowledge for development.

Regarding the benefits of disseminating research findings notwithstanding, the Research Dissemination Support Approach (RDSA) in Tanzania was found to be too insignificant to ensure that the university research knowledge reaches the right people or destination in the right timeframe. The RDSA is typically based on supporting the university research community to disseminate research knowledge largely to the academic community. The university's research community was less incentivised to share their research results or knowledge beyond the academic audience to groups such as policy-makers, industry personnel, community leaders and members.

The university research community, as shown in the findings, for example, received support to publish their research results in local peer-reviewed journals and in the form of dissertations and theses mainly in hardcopy format. Moreover, they were permitted to attend academic conferences through self-sponsorship or after obtaining funding from elsewhere. Journal publications and conference presentations belong to a closed system of research knowledge dissemination because they lay emphasis on scholar-to-scholar communication, as opposed to the open system that includes scholar-to-government, scholar-to-industry, and scholar-to-community knowledge communication (Bennett & Jessani, 2011; Trotter *et al.,* 2014).

Even the support to disseminate knowledge to academic circles (scholar-to-scholar), which Tanzanian universities heavily relied upon, was primarily based on face-to-face contact (through conferences and meetings) and local peer-reviewed journals mainly available in hardcopy. The research knowledge dissemination support was less effective in encouraging the university research community to utilise online platforms such as the internet and social media to disseminate their research-based knowledge, at least in abridged form, in order to enhance the visibility and accessibility of university research. Neither did the support incentivise the university research community to disseminate their

research knowledge in international top-tiered journals in order to reach an international scholar audience and promote the status of institutions. In some countries, such as China, members of academic staff in research-intensive universities are rewarded with an international publication funding up to 3250 USD (1970 GBP) after their paper is published in international journals indexed in the Thomson Reuters Web of Science (WoS) (Jiang *et al.*, 2015).

A heavy reliance on the local off-line journals in Tanzania, as shown in this study, reduces the visibility of the country's knowledge in international premier journals, including those indexed in the WoS and Scopus. The WoS and Scopus are the world's premier journal impact measures that show the value of the knowledge in the journal article by calculating the number of the article downloads, views and citations. The non-appearance of Tanzania's and other developing countries' knowledge in the indexed WoS and Scopus journals and other world's premier journals available online led to the inappropriate conclusion regarding research and scholarship from developing countries. Many analysts view research and knowledge from developing countries as not only invisible but also worthless in shaping theories, policies and practices (Ondari-Okemwa, 2007; Dessie & Mesfin, 2013; Trotter *et al.*, 2014).

Furthermore, data reported in this study indicate that the universities under review employed exhibitions and conferences in order to promote the dissemination of research. The universities under study participated in national higher education exhibitions and organised research exhibitions at the institutional level where various research exhibits, such as publications, software and other research related products produced by the university research community, were displayed. Research exhibitions are greatly applied in fostering a research culture in many universities across the globe. Universities tend to use both offline (analogue) and online (digital) provisions such as websites and social networks to disseminate research-based knowledge, demonstrate and market their research capacity and strengths. The exhibitions act as a basis for stimulating academic interaction, networking and mutual understanding among the university research community and other higher education-related stakeholders such as students, academics, alumni, donors and policy-makers (Fenwick, 2012; Trotter *et al.*, 2014; Cloete *et al.*, 2015).

Despite being regarded as an effective approach to disseminating research knowledge and promoting a research culture in universities, the research exhibition as demonstrated in the findings was crudely used and largely underutilised in Tanzanian universities. As a result, the approach was unable to raise institutional research visibility to market the universities. Universities in Tanzania displayed and presented their research exhibits at annual national higher education exhibitions where participation was on a voluntary basis. For the exhibitions conducted at the institutional level, the findings of this study established that only one university was consistent in organising these institutional research exhibitions. Moreover, the research exhibition was crudely used because universities under review relied greatly on offline (analogue) exhibitions rather than online (digital) exhibitions. Despite having university websites, digitised information regarding institutional research is hardly found in these universities. Institutional websites in the universities under study display only programmes on offer, institution's vision and mission, almanacs and names of senior university leaders.

Academic staff names, specialities and titles or full papers of their scholarly publications are not on display in the institutions' websites. Recently, one public university under study has been striving to provide detailed information regarding the research publications of academic staff, by providing all requisite details, links and even downloadable full-texts.

The dominance of the traditional mode of research exhibition in universities is not only a Tanzanian affair. It is also experienced in other countries, particularly developing ones. Trotter *et al*. (2014) revealed a similar experience in a study that sought to establish the visibility and impact of university research in four Southern African universities. Institutions participated in the study of Trotter *et al*. (2014) evaded using online leverage to extend their research visibility so that their academics are easily searchable and locatable by national and international higher education stakeholders.

Institutions involved in the study of Trotter *et al*. (2014) confined their research exhibitions to traditional modes such as conference presentations and other face-to-face contacts. This occurred despite the availability of most of the necessary technological infrastructures such as the internet, institutional

websites and Web 2.0 technologies such as Twitter and ResearchGate. The implication is that research generated from developing countries is often largely unknown outside the locality in which it was generated, and sometimes no matter how prolific they may be, many developing countries academics rarely receive an international reputation because of their invisibility, which is detrimental to the development of their institutions and nations as well.

Unlike scholars in developed economies, who are already visible and sitting at the higher echelons of the global scholarship through their scholarly publications in top-ranked prestigious journals, it is ironic that the developing world's universities fail to utilise online platforms to demonstrate their research strength and capacity to professionally market their academics. Even though most of their scholars have gained an international reputation, universities in the developed world continue engaging in both face-to-face (e.g., conferences and exhibitions) and online platforms (e.g., Web 2.0 technologies and institutional repositories) to exhibit, disseminate and market their institutional research and academics.

6.3.5 Research Collaboration and Networking Approach (RCNA)

The study has found that Tanzanian universities collaborate and network with various local and international universities in their bid to strengthen university research. This finding is in accordance with the Stufflebeam's (1971) CIPP framework guiding the study, which shows that collegial research environment is a crucial factor in developing a research culture in higher education. In the same vein, the growing body of literature on research culture in higher education indicates that research culture is a system of shared norms, assumptions and values concerning research. This implies that research activity, especially in higher education, cannot flourish when viewed as a solo activity, unless it is viewed and accepted by institutional members and other stakeholders as a collegial group activity (Hazelkorn, 2005; Evans, 2007; Jacob & Meek, 2013; Teferra, 2016).

From a broader perspective, institutional research collaboration and networking are also cited in different studies as an integral part of the established approaches to promoting university research (*cf.*, Hill & Haigh, 2012; Magnus,

2012; Jacob & Meek, 2013; Ishengoma, 2016). The community of research practice, for example, was found to be significant in building research capability of educational researchers in Canadian, Norwegian, British and New Zealand universities (Hill & Haigh, 2012). Likewise, universities in countries such as Sweden, South Africa, the United Kingdom, Russia, Australia and the United States, are increasingly moving towards international research collaborations and networks through establishing positions of Research Chairs and Postdoctoral Fellowships to attract experienced and junior researchers all over the world (Bland *et al.*, 2005; Taylor, 2006; Jacob & Meek, 2013). Altogether, these continental and regional university collaborations have been crucial in elevating research profiles of universities through addressing or overcoming problems inherent in universities in one region or continent through collaborative efforts, such as research funding, research capacity, raw data-set, technology and outstanding research personnel.

Although national and international university networks and collaborations undoubtedly offer countless advantages in promoting university research, several obstacles challenge their formation (Swilling *et al.,* 2011; Jacob & Meek, 2013; Ishengoma, 2016), particularly when the networks involve universities in developed and developing countries. The findings of the present study, for instance, indicated that Tanzanian universities faced several challenges that hindered their effective participation in research networks and collaborations such as inadequate and inexperienced researchers in bidding for various research projects, undeveloped intellectual property system, research funds and impoverished university-industry linkage. These problems facing Tanzania's and other universities in the developing world often lead to a one-sided system of collaboration. Usually, the university or nation in the developed economies because of its advantage of having established systems of intellectual property, technology, adept researchers, funding and well-informed research policies tends to dominate the university or nation in the developing economies devoid of these features.

As the findings reported in this study indicate, many research capacity development programmes and research projects were funded by foreign institutions that collaborated with Tanzanian universities. Inevitably, donors'

funding can come with strings attached, largely in favour of the participant developed countries which would go unchallenged by partners in developing countries in desperate need of the research funds. Ishengoma (2016) and Swilling *et al*. (2011) also note that nearly 80% of research networks in African universities are heavily funded by donors. The tragedy is that such research funding is firmly anchored to the specific research agendas of the participant developed countries, which may not be valuable to the host developing nations in need of value-added research output that may help make a difference in changing the research culture and bolstering socio-economic development. In this regard, what is needed is to strengthen domestic collaborations and networks that may encourage African universities to participate in international collaborations as equal partners, instead of being considered as weak institutions badly in need of support and funding.

To summarise, this section has discussed the findings on the approaches used to develop a research culture in Tanzanian universities. The discussion has demonstrated that most approaches used to develop a research culture in Tanzania fall short of being profound in cultivating a prosperous research culture, when compared to other nations in the world and Africa, in particular, South Africa, Morocco and Egypt as discussed in this section. The following section (6.5) summarises and concludes the chapter.

6.4 Summary and conclusions

This chapter has presented the findings and discussion pertaining to the role of Tanzania's higher education institutions in developing a research culture. The chapter has shown that universities under study played a significant role in developing university research; however, most of the approaches used to develop a research culture lacked a profound impact on developing a successful research culture in comparison with other African universities and beyond. As such, there is a need to formulate and implement vibrant institutional research policies and practices, in order to uplift and improve the current research culture in Tanzania. The following Chapter 7 presents the findings and discussion regarding the challenges higher education institutions face in developing a research culture in Tanzania.

7 Challenges of Developing a Research Culture in Tanzania

7.1 Introduction

This chapter presents the findings and discussion related to the third research question on the challenges of developing a research culture in Tanzanian universities. Similar to previous empirical chapters presented in this study, this chapter is organised into sections, beginning with a presentation of the findings and followed by a discussion. As such, this introduction is followed by a presentation of the findings in section 7.2. Moreover, section 7.3 discusses the findings, followed by section 7.4 which summarises and concludes the chapter.

7.2 Challenges of developing a research culture

As summarised in Table 7.1, data analysis in this study identified several categories or sub-themes which were then used to form five major themes that constitute major challenges that Tanzanian universities face in developing a research culture. These challenges, which include fragmented connection among key research stakeholders, low level of research funding, lack of reading and writing culture, heavy teaching and administrative workload and inadequate and inexperienced academic staff, are presented in the following subsections.

Table 7-1 Challenges of Developing a Research Culture in Tanzania

Key themes	Categories or sub-themes
Fragmented connection among key research stakeholders	• Research-based knowledge from the university were not readily available at the national level and even within the institutional departments • Weak research link among the triple helix: university, government and industry/community • Knowledge dissemination practices focus primarily on scientific/academic methods, e.g., dissertations and journals
Low level of research funding	• Research funding relies mainly on donors • Small allocation of research funding from the government
Lack of reading and writing culture	• Poor attitude to reading and research from lower education levels • Rote learning practices at universities • Poor policy enforcement with regard to research and publications in universities
Heavy teaching and administrative workload	• Handling up to six courses in large classes per semester • Mismanagement of time • Research phobia
Inadequate and inexperienced academic staff	• Master degree is a valid visa to a permanent university employment • Young academic workforce and institutions

Source: Field Data

7.2.1 Fragmented connection among key research stakeholders

The findings established the existence of a fragmented connection among key research stakeholders in Tanzania, particularly the triple helix: universities, the government and the wider community (including the industry or the business sector). This challenge has resulted in difficulties in conducting relevant research topics, getting funding, disseminating the research results for knowledge valorisation and recording the volume and impact of university research. Research findings and knowledge generated from universities, for example, were not readily available at the national level. The research-based knowledge was not even readily available at the institutional level either, as, during fieldwork, the universities under study had no comprehensive repositories of the research conducted at their institutions, let alone a comprehensive repository of the influence of their research to the community. The following statement confirm this uncovered pattern:

> There is a weak linkage between research institutions including universities, the government and the people in the industry and community who are supposed to use research findings. (Academic Staff: RS3)

The implication is that the fragmented connection among the triple helix creates a confused situation. Researchers just think of research as their personal property, which is wrong, because research findings are supposed to be disseminated beyond the publication outlets so that the information reaches the targeted group. Similarly, one is left uninformed of how much research is produced from the university, how much research funding is provided to the university and what influence or impact the university research has on the wider community:

> The uptake of research results and findings by the industry and policy makers remains minimal, and this leads to a perception of low relevance of research activities done by institutions of higher learning in the country. (Director of Research: RS3)

This statement suggests that the fragmented connection among the triple helix hampered the dissemination of information regarding major research projects conducted by institutions and general research outputs produced by universities. This situation resulted in not only the duplication of similar projects or themes

by neighbouring departments or universities, but also in a negative perception towards the relevance of the university and university research within the external community. This is also captured in the following statement:

> You will find someone in the Chemistry Department and another in Engineering in the same institution working on malaria, and they are both individually supported, instead of telling them to work together. In Europe, universities tend to know, for instance, this group is working on malaria and all the government or industry or university efforts are directed to that group and project. (College Principal: RS3)

Participants in this study pointed out that the duplication of similar projects was not only confusing but also constituted a waste of resources, given the meagre research resources available in Tanzania. Reflecting on the underlying causes of the fragmented connection among the triple helix, the findings show that there was yet a sustainable and enabling environment for monitoring and harnessing university research in the country. Indeed, a lack of specific allocation of research funding as shown in Chapter 5 was mentioned to aggravate the fragmented situation, as it was not possible to hold one accountable for not sharing the research output with other stakeholders in the triple helix while one was not provided with some funds to conduct research:

> We don't have that system of monitoring and, of course, recording how much research is conducted in our research institutions or universities, and because there has been a problem of not having a specific allocation of funds for research to higher education institutions, you find that most of the academic staff conduct research from the donor funding sources, that's where now the issue actually is. (Higher Education Officer: RS1)

As such, participants commented that the government of Tanzania should sponsor research, as doing that will facilitate the conduct and sharing of research outputs. The government should not wait until problems have arisen then it provides funding for research, because that will not help. One of the participants explained more on this:

> The government should not wait until we have problems and then it sponsors research because that will not help. We should have answers before we get problems. And, we should apply the research results to solving problems and executing various plans, because nowadays you do research and then the findings end up on the shelves. (Director of Research: RS4)

This statement implies that the country should have answers for various issues grounded on research-based knowledge before problems occur and apply this research-based knowledge in solving various problems and implementing various plans. In so doing, the connection and partnership among the key research stakeholders (the triple helix) can be enhanced.

7.2.2 Low level of research funding

Participants in this study identified low research funding as the most critical challenge that hampers the development of research in Tanzania. The findings show that research funding in the universities under review depends primarily on donors. Due to the absence of comprehensive research repositories in the universities under study or within the faculties, it was difficult to get statistical data regarding sources of funds for academic staff members' research and publications for the past five years. It is only now that one of the public universities under review is attempting to set up such a database. During fieldwork, the Directorate of Research of this public university was applying the database on an experimental basis before launching the database that would document research, publications and consultancies of academic staff.

Nonetheless, during interviews, the majority of academic staff indicated that they often self-fund their research activities, sometimes using the donor sources which are often deemed inadequate and unreliable. The donor sources mentioned include the World Bank, UNESCO, UNICEF, FEM, SIDA, DAAD, African Union, FAWE, CODESRIA, OSSREA, ESAURP and REPOA. The majority of these donors are external to Tanzania; for example, from the foregoing list, only REPOA and ESAURP are local donors. The following statement explains in detail:

> Research funding remains to be highly foreign partner dependent with declining government investment in research over the years, while taping into the local donor sources and private sector has been limited. (Director of Research: RS4)

In other words, inadequate research funding is a prevailing problem within Tanzanian universities, and that this was heightened due to a small allotment of research funding committed by the government of Tanzania. What the government does is just to support research institutions, in terms of building

labs, but it does not directly sponsor research projects. It is worth restating that Tanzania allocates 0.3% of its GDP for research and development (see Chapter 5). This funding was, however, not reliable, implying that its allocation depends on the availability of the fund, as explained in the following statement:

> Research funding is a problem in Tanzania, the biggest problem is that the government is not directly sponsoring research, so we depend greatly on the external donors. Although the African Union governments agreed on spending one percent of the GDP, that is not realised. (Faculty Dean: RS5)

Even when this funding could be available on a regular basis, participants in this study maintained that the 0.3% is too small to meet the research needs of the country. Although the findings also show that the government of Tanzania through its fourth term president announced to increase R&D funding from 0.3 to one percent, beginning from the 2010/2011 fiscal year (Shoo, 2009), the 0.7% increment had yet to materialise during the writing of this report.

7.2.3 Lack of reading and writing culture

The findings of this study show that the culture of reading was low among members of the university research community, something which in turn undermined their writing aptitude. Given the mission statements of the universities under review – that research is a core function of these universities – and the national policy guideline that: "All academic staff are expected to spend 35-45% of their time [o]n research activities" (TCU, 2014, p.50), it could be expected of a large percentage of academic staff to have at least one publication in a refereed journal/publisher or one manuscript undergoing review during fieldwork. On the contrary, the majority of academic staff, despite possessing postgraduate qualifications, did not have a single publication to their name or a manuscript under review. As stated elsewhere in this report, a Master's degree was the minimum education qualification for the academic staff who participated in this study. The following statement attests to the lack of a reading culture among members of the university research community:

> Our students today are not eager to know new things. They do not want to read widely, they depend on what we teach in classes. (Faculty Dean: RS5)

Another participant elaborated more on this:

> Most postgraduate students and researchers do copy the research topics from previous researchers and pretend to be their own. This is a result of lacking a culture of reading and the preference for shortcuts. (Postgraduate Student: RS5)

Although some participants involved in this study attributed their possession of limited research outputs to their position as new recruits with just a year's experience, six participants from universities under study encountered during the interview were in their fifth and fourth year of service, without a single publication nor a manuscript under review. The findings demonstrate that the unwillingness to engage in research by members of the university research was a result of lacking a reading and writing culture from even the lower levels of education:

> We don't have the spirit of reading, from the lower level of studies up to the universities. If you don't have the reading culture automatically even if you become an Assistant Lecturer you will just end up with that rank, because publishing, you know, needs one to read extensively… (Academic Staff: RS6)

Some participants who have an international experience further compared the reading culture of Tanzanian academics with other African countries and beyond:

> What we are missing here in Tanzania is the aspect of reading culture. Reading culture is low; it is not as high as, say, to Kenya where I stayed for three years doing my Master's degree and Finland where I stayed for four years doing my PhD. (Academic Staff: RS6)

Moreover, senior university leaders involved in this study noted that the university research community missed critical research ideas as a result of their lack of reading culture. These senior university leaders commented on some academic staff who strongly believe that they conduct research for universities, and not because they are professionally obligated. This comment by senior university leaders was also confirmed in the following statement of one of the junior academic staff who provided reasons for limited research outputs they possess:

> I don't have the morale to publish because in order to move from my current position to the next, a PhD is needed. I see what is important right now is to have my PhD first. Therefore, I concentrate much on looking for PhD scholarships. (Academic Staff: RS3)

This statement suggests that some academic staff view the activity of researching and publishing research results is reserved for senior academics with doctoral qualification. This view misses an important point that even faring with the rigours of postgraduate studies requires one to develop a culture of research and writing from early stages of career. The implication is that one cannot write if one does not read. Reading encourages one to acquire wisdom, ideas and writing skills, particularly when one reads extensively exemplary articles from peers in one's respective field.

7.2.4 Heavy teaching and administrative workload

Participants from all of the four universities under study mentioned teaching and administrative workload as one of the most troubling challenges undermining the development of research in Tanzania's higher education institutions. The majority of academic staff members involved in this study claimed that teaching and administrative responsibilities consumed so much of their time that they were unable to engage in meaningful research:

> In this semester, I have 3 courses and one of the courses has about 1000 students. I have to provide assignments, quizzes, tests to students, and I have to mark and give them feedback. Therefore, you will find that I end up doing teaching throughout the semester. (Academic Staff: RS6)

Another interviewee added this statement:

> Remember that we have a huge teaching responsibility. For example, this semester, I have six courses, while in the previous semester I had like five courses, two postgraduate courses and three undergraduate courses. Additionally, I have to supervise postgraduate students. (Faculty Dean: RS3)

Participants stated that the teaching and administrative workload was a result of academic staff shortage, which is experienced by many universities in Tanzania. This is highlighted in the following statement:

> I handled three courses just alone and I shared two with other academic staff members. So, you can imagine what amount of time you can use to conduct research when teaching also needs preparation. (Faculty Dean: RS3)

The implication here is that with a shortage of academic personnel, staff members had to grapple with the teaching, administrative and research responsibilities. This resulted in letting some of the research-related tasks such as the supervision of postgraduate students to be conducted in a disorganised fashion. Given the busy teaching schedule, supervisors insist that postgraduate students should go to the library and read on their own, which has negative implications for enhancing students' research and writing skills, as commented by one of the postgraduate students involved in this study:

> Our lecturers have a lot to do to the extent that they fail to greatly supervise our research. They just insist that we should go to the library and read on our own. We do utilise our libraries but their consultancy is very important. I think this also contributes much on having poor research reports produced by students. (Postgraduate Student: RS6)

Whereas participants, particularly academic staff members, insisted that the teaching workload took away much of their time and energy from research, some academic staff from two institutions under study proffered different views. These members of academic staff explained that some academics misuse their time on what they perceive as non-productive issues such as drinking alcohol, chatting, travelling and storytelling, instead of using such time to engage in research or other productive issues. They insisted that members of academic staff should look at the requirement of conducting research and publish as something that they must do. Once this fact is accepted, excuses for not having enough time or incentive or heavy teaching workload will stop or be kept at minimal. This is detailed in following statement:

> You'll find someone saying the workload is too much, but [they] spend too much time drinking beer and gossiping. If you build a culture of research, let's say spend about two hours per day researching and writing, at the end you will become a productive researcher. (Faculty Dean: RS6)

Additionally, the following statement supported this view:

> To me, I would say time is not a problem. I am usually early in the office and you will find me already here around seven in the morning. I would just work on my administrative issues and prepare maybe my lectures and another time I would try to look at what I should write on. (Associate Dean: RS4)

These statements help to explain why within the same institutions some members of academic staff do research, carry out consultancies, teach and provide community service, and get promoted, while others retire without ever getting a promotion even to senior lecturer. It is thus evident that for some, the heavy teaching and administrative responsibility should not be used as a pretext for failing to engage in research. As such, one member of academic staff involved in this study told the story of an Engineering lecturer who wanted to use a heavy workload of teaching large classes as an excuse for failing to publish, only to be admonished by his head of department, who retaliated that his Vice-Chancellor publishes despite his heavy workload, and has never used administrative duties as an excuse.

7.2.5 Inadequate and inexperienced human resource

The study has found that the universities under review experienced a shortage of human resources, particularly academic staff, and the vast majority of these faculty members were inexperienced researchers. One interviewee stated this during fieldwork:

> Higher education institutions [in Tanzania] engage few members of staff, that's one. Second, those few are given a lot of teaching responsibilities. (Faculty Dean: RS5)

Moreover, participants involved in this study maintained that there are cases in some universities, particularly in some private universities in Tanzania, where once members of academic staff attain their Master's degrees they are not encouraged to advance to doctoral level study, to avoid creating a staff shortage, yet, research at the doctoral level is vital in sharpening the research skills of academic staff. With the exception of one long-established public university, other universities under study started to offer degree programmes in the 2000s. As a result, many of their academic staff recruits were young, and

the majority had just completed their doctoral degrees or were required to enhance their academic standing by attending postgraduate studies.

A review of national and institutional policy documents indicated that a serious deficit in the availability of senior and experienced academic staff within universities in Tanzania were due to a number of reasons including the 1990s' employment freeze, retirement, premature death and relocation to better employment, government and new universities (UDSM, 2014b; URT, 2014b). As such, academic staff members were over-utilised, as a result of their shortage in supply. This is specified in the following statement:

> There is an international class size when it comes to universities. The ratio is supposed to be 1 to 20, but surprisingly you will find that the class of 900 students [in a Tanzanian university] being commanded by one member of academic staff. So there is a need to, at least, balance the academic staff-student ratio, to give room for members of staff to conduct research. (Faculty Dean: RS5)

The implication is that a shortage of academic staff members and the presence of inexperienced researchers, hampers research activity in Tanzanian universities. Participants involved in this study also insisted that the limited research and writing skills inhibited the ability of academic staff members to pursue new and innovative lines of enquiry as well as competing for large-scale research grants:

> There is a problem of lack of capacities to write winning proposals, because members of academic staff in my department have been trying to write proposals but when competed with others they are not selected. (Faculty Dean: RS3)

Following this challenge of inadequate research and writing skills among members of the university research community in the country, participants insisted on strengthening training in research methodology courses and proposal writing.

In summary, this section has presented the findings on the challenges Tanzanian universities face in developing a research culture. The question is what kind of debilitating effects accompanied by the challenges presented thus far? In order

to answer this question, the following section (7.4) presents a discussion related to these specific challenges.

7.3 Discussion of the findings

The discussion of the findings regarding the challenges of developing a research culture in Tanzanian universities is presented in this section. To maintain clarity, the discussion follows the order used to present the findings in section 7.3.

7.3.1 Fragmented connection among key research stakeholders

This study has found the existence of a fragmented connection among universities, industry and government, which are key research stakeholders in any country. As the findings reveal, this challenge has resulted in difficulties in conducting relevant research topics, getting funding, disseminating the research results for knowledge valorisation and recording the volume and impact of university research. These findings are contrary to what is envisaged in the Stufflebeam's CIPP framework. The CIPP's framework demonstrates that mutual collaboration among the university, government and the community or industry creates a launching pad for developing a sustained research culture in universities, conducting research which is relevant and applicable in meeting the needs of the immediate society, and strengthening a university-industry link for knowledge valorisation.

Similar conclusions regarding the fragmented connection among the three entities have been reached by other studies on research culture in higher education conducted in developing countries. These studies concluded that many universities in developing countries are detached from the government and the community by conducting research that is mostly driven by curiosity, rather than a need to find solutions to practical problems facing society or industries (Kian-Woon *et al.,* 2010; Lewis & Simmons, 2010; Pinheiro & Pillay, 2016; Nguyen, 2016). On the contrary, a mutual relationship resulting from research among the three entities – universities, industry and government – exists in developed economies (Olsson & Cooke, 2013; Kruss *et al.,* 2015). This makes these countries far better and successful in scientific knowledge production, transfer and translation.

The partnership and positive relationship among the university, industry and the government, which is also called the triple helix, has been commended for its crucialness in bolstering the success of knowledge generation, transfer and application – knowledge valorisation (Etzkowitz & Leydesdorff, 2000; McConnell, 2002; Kruss *et al.*, 2015; Pinheiro & Pillay, 2016). Despite the significance attached to the triple helix, the fragmented relationship among the three mentioned entities in Tanzania has resulted in major headaches in disseminating, translating and recording the volume and impact of university research. The government of Tanzania, for example, remits to universities a small amount of research funding through COSTECH (see Chapter 5). However, the database or record for each university relating to what kind of research and how much research resulted from this kind of funding and other sources of funding was absent.

Indeed, data reported in this study indicate that in many cases, the research conducted lies on the desks and shelves of responsible researchers, and also lacks a designated place in some of the academic libraries, as grey literature if rarely taken seriously for inclusion as part of the library collection. Thus, policy-makers and practitioners are usually unaware of what is taking place in universities in terms of research, and are often uninformed of scientific evidence available in the country's universities that could be used to support decision-making and practices. Some participants involved in this study mentioned a 2012 case referring to the Tanzanian government's formation of a task force to examine factors behind the poor performance of certificate for secondary education examinations (CSEE). The 2012 CSEE performance went on record as the worst national examination performance ever in Tanzania, as more than 60% of the candidates failed the examinations. Some participants in this study saw no reason for the Tanzanian government to form a task force to examine factors behind such poor examination performance when they were well-documented through research, and the findings from such investigations were placed on the shelves of universities.

Similarly, some participants involved in this study accused researchers of treating research results as their personal property even when the research undertaking is publicly funded. Data presented in this study show that there was

an absence of any significant mechanism established to disseminate the research results beyond peer-reviewed publications or scholar-to-scholar communication. For example, research results are presented for the purpose of communicating to academic circles, as the language of communication tends to be English, when the vast majority of Tanzanians are conversant with Kiswahili, the country's national language and East and Central African lingua franca. As such, the research-based knowledge that are published in peer-reviewed work can be understood to largely exclude non-academic audiences (key users of the research results) from direct benefits. This raises the question of the role of researchers as professionals and public intellectuals. Although academics and scientists can benefit from an academic journal article, policy-makers and practitioners may require a policy brief and lay public audiences may make use of an illustrated information leaflet or booklet written in an accessible language.

7.3.2 Low level of research funding

The findings reported in this study show that generally there is a low level of research funding within Tanzanian universities. The main sources of research funds in Tanzania are the government, donors and academic staff's own money. Eighty percent of most research conducted in Tanzanian universities is funded by donor sources, mostly from outside Tanzania, followed by some self-funding initiatives taken by individual academic staff. What emerges is that the government of Tanzania only commits a small amount to support research activities in universities despite its paradoxical possession of a strong policy statement that recognises the centrality of research in development. The government of Tanzania remits only 0.3% of its GDP for research activities, which is too small to meet the research needs of Tanzanian researchers.

The findings regarding research funding in this study do not support the CIPP's framework and UNESCO's (2015) observation. The Stufflebeam's CIPP framework demonstrates that a sustained funding of research activities in universities tends to result in a successful research culture among the members of the university research community. Moreover, UNESCO (2015) shows that top-ranking countries for producing ground-breaking research allocate a considerable amount of GDP to research and development (R&D), such as the United States, which allocates 28% of its GDP to R&D, China (19.6%), Japan (9.6%), Germany (5.7%), Republic of

Korea (4.4%) and the United Kingdom (2.5%). Equally, the 0.3% of the GDP allocation in research remitted by the Tanzanian government also goes against the agreement of the NEPAD Council of Ministers of Science and Technology signed in 2003, and that of the Executive Council of African Union in 2006 that require each African member state to direct at least one percent of its GDP to research.

From broader perspective, research funding has remained a constant challenge in most universities in developing countries, particularly Africa (Olsson & Cooke, 2013; Trotter *et al.*, 2014; UNESCO, 2015). Among the 19 surveyed countries in Africa, for example, only three – Uganda, Malawi and South Africa – were found to commit up to 1% of their GDP on research. The other 16 countries devoted only between 0.2 and 0.5% (Kraemer-Mbula & Scerri, 2015). As such, this funding limitation, as already stated, drives the university research community to over-dependence on donor funding and unreliable self-funding sources, thus hindering the development of a sustainable robust research culture.

Indeed, the impact of low research funding on higher education may not seem to be a big problem on the surface, however it becomes a matter of grave concern when one deeply analyses it. Firstly, the low level of research funding inadvertently encourages parochialism in research foci. This implies that research conducted tends to be localised, small-scale and lacking serious scholarship. Academics and researchers in a low research-funding context are deprived of the opportunity to access first-rate academic journals, books, software and laboratory apparatuses because there is no money for their subscriptions, attendance to international and regional conferences and meetings with prominent scholars in their fields, as well as conducting large international research projects. As a result, these academics and researchers are limited to studying themselves only, as opposed to academics and researchers in the lofty research-funding context who can study their own countries and other countries as well, because of the extended power of financial capacity, which may allow them to go global.

Secondly, the low level of research funding in higher education increases the reliance on external donor support. As the findings in this study reveal, around 80% of incoming donor funding directed to support research in Tanzania was

from donors in Western countries. Previous research made a similar observation, particularly in Africa, where many governments spend as rarely as 1% of GDP to research and development (R&D), however they receive around 90% of research funding from donors (UNESCO, 2015). This is emphasised in the following statement:

> A significant portion of research in Africa is conducted under bilateral or multilateral aid… such support can be as high as 70-90% of total available research funds (Swilling *et al.,* 2011, p.8).

In light of this, relying too heavily on external donor support is not only an unsustainable course of action but also a flawed route (Assié-Lumumba, 2006; Metcalfe *et al.,* 2009; Olsson & Cooke, 2013; Cloete *et al.,* 2015). By virtue of their economic power, bilateral and multilateral donor partners, for example, the World Bank (see Chapter 2), gets involved directly in setting education policies, priorities and agendas in recipient-donor countries. The suggested policies by multilateral donors do not often match with the recipient countries' research agendas and priorities. In many cases the external funding coupled with its conditions does not aim to emancipate recipient countries from dependence, because there is little element of this donor funding that shows a sign of developing these recipient countries' own capabilities to formulate and implement research policies and priorities (Brock-Utne, 2003; Swilling *et al.,* 2011; Olsson & Cooke, 2013; Cloete *et al.,* 2015). The implication is that relying heavily on research funding from donor countries could result in more harm than good, as the recipient countries may not be able to disentangle themselves from the exploitative policies and camouflaged research agendas accompanied by the donor funding. In consequence, university research in individual African countries in particular and developing countries heavily dependent on multilateral donors in general, is rendered in the doldrums.

7.3.3 Lack of reading and writing culture

The findings of this study show that the culture of reading was low among the university research community (academic staff and students), something which in turn undermined their writing aptitude and their full participation in research activities. Many academic staff members with Master and doctoral qualifications did not have a single publication to their name, despite being in their fifth year

of service and being aware of the institutional requirement that they undertake research and publish, in order for them to climb the academic ladder.

The findings have also established that a lack of a reading and writing culture on the part of Tanzania's university research community resulted in the duplication of previous studies regarding ideas and methodology employed. Emiru (2012) reported similar findings in her doctoral thesis that examined the research culture of Addis Ababa University in Ethiopia. She interviewed senior university leaders, members of academic staff and students, as well as analysed 30 doctoral theses conducted between 1993 and 2010. The study found a low attitude to reading and writing, as most of the doctoral studies employed similar methods and concentrated on similar themes and contexts (Emiru, 2012). Topics selected for academic research were found to be those that would enable one to simply earn a degree without focusing on the pressing societal problems that called for solutions based on empirical knowledge and research.

The development of a successful research culture begins with a liking for reading and writing (Altbach, 2013; Jiang *et al.,* 2015). In this regard, Ridley (2011) enlightens: "Researchers need a level of perseverance, patience, industriousness and studiousness, perhaps driven too by intense curiosity if they are to achieve the levels of rigour and scholarship that research requires" (p.286). Ridley's statement is contrary to what is established by the findings of the present study, presented thus far. It is imperative to note that one is not necessarily born with a culture of reading and writing. Like other forms of cultural practices, reading and writing culture can also be taught, learnt, shared and acquired from other members of society or cultivated by both the institution and the government. In other words, the problem of a weak attitude to reading and writing and eventually a lack of a research culture does not begin with or end with an individual academic member of staff or student. It also involves the community and the government at large.

Reading and writing culture belongs to a system of shared attitudes, beliefs and ideals about the indispensability of knowledge in improving the standard of living held by the individual academic staff, student, management, community members and the government (Evans, 2007; Parse, 2007; Jiang *et al.,* 2015). If research knowledge is valued and considered worthwhile by community members

and the government in planning processes and problem-solving, then the university research community could value reading and writing for knowledge production. The typical problem of many governments in developing economies is to ignore research knowledge, particularly locally-produced in their policy and development deliberations (Lewis & Simmons, 2010; Emiru, 2012; Trotter *et al.*, 2014; Teferra, 2016), to the extent of lowering the morale and attitude of academic staff and students towards reading and writing by devaluing their efforts to produce knowledge. One, therefore, finds that in these developing economies the issue of research funding takes the back seat in the national policy agendas, and researchers conduct research just to prop up their academic credentials and not to solve pressing problems their societies face.

7.3.4 Heavy teaching and administrative workload

A heavy teaching and administrative workload emerged in this study as one of the limiting factors to the development of research in Tanzanian universities. The heavy teaching workload coupled with administrative tasks is attributed to the limited number of academic staff available, as one academic staff could handle up to five courses per semester in a largely populated class of around 1000 students. These findings oppose Stufflebeam's CIPP framework guiding the present study, which explains that the moderate distribution of teaching and administrative responsibilities to academic staff sets the stage for pervasive research-led teaching and learning in universities, and eventually promotes a sustained research culture among the members of the university research community. The findings support previous research conducted in the Philippines, Ethiopia, Cambodia and Namibia, which found that universities in these countries tend to press greater emphasis on teaching responsibilities than on research for their academic staff, despite these institutions claiming that they crave to become research universities (Kian-Woon *et al.*, 2010; Dessie & Mesfin, 2013; Trotter *et al.*, 2014).

Conversely, a modest allocation of teaching responsibilities to academic staff members was found in Canada, the United Kingdom, Australia and the United States (Russell Group, 2012; Crespo & Bertrand, 2013). Academic staff members in these Western countries are given a reasonable timescale for undertaking research and they tend to handle two to three courses per semester in less

populated classes. This is largely true for research-based universities as opposed to teaching universities even in these countries.

A growing body of literature on the development of university research has long established that a modest teaching and administrative responsibility, that grants time for conducting research and publishing, is one of the enabling factors for a successful research culture within higher education institutions (Altbach, 2013; Shin & Lee, 2015; Nguyen, 2016). Nonetheless, a heavy teaching and administrative workload appears to be a dominant factor limiting the development of university research in developing countries, as shown in the foregoing analysis of different studies. One may, nevertheless, seek explanations for why other academics in the same institution with a similar heavy teaching workload are active researchers and manage to produce research outputs in abundance, when others give up even before they could venture into such research. On a limited scale, though, different opposing views regarding a heavy teaching workload are also proffered in developing countries.

Some academic staff members who participated in this study, for example, maintained that there seems to be a heavy workload in terms of teaching and administrative tasks, due to a lack of or poor time management on the part of researchers or academic staff members. These participants argued that time is always a scarce commodity and thus should be managed carefully but should not be used as an excuse for the persistent failure to conduct research and publish the research outcomes. In this regard, they separately explained that some academic staff members tend to use a heavy teaching workload as a scapegoat for their failure to undertake research, often due to laziness or sheer ineptitude. In other words, it is possible for members of academic staff to become active researchers if they budget their time properly.

Different perspectives can be advanced to explain the prevalence of a heavy teaching workload in universities. This study considers the following to be the major ones. Firstly, the reduction in government funding to higher education has forced universities to seek alternative sources of funding elsewhere, and the only option for many universities is to introduce more programmes and increase enrolment, as students' fees are the source of such funding. The reduction in government funding to higher education has witnessed a mushrooming of the so-

called ‘entrepreneurial universities’, a development which is healthy for the financial strength of the university, but can be detrimental to the provision of high quality and relevant higher education in a nation. As a result, many universities have introduced short and long-term programmes to augment the government budget without considering the capacity of their teaching force. Some universities are increasingly developing online programmes as a strategy of internationalisation in order to diversify their sources of income by attracting international students.

In consequence, the mission of many universities is oriented towards making more money for their survival, which thus results in side-lining research activities. The problem appears to be more aggravated in developing economies rather than in developed economies, due to the weak quality of quality assurance bodies (Trotter *et al.*, 2014; Bailey, 2015). In 2012, Tanzania, for example, had only 3,655 members of academic staff required to serve 160,514 students enrolled in non-degree and degree programmes (URT, 2013). With such a large number of students, and with a severely limited teaching force, teaching tends to become the dominant activity. Research is easily side-lined because it is a high-stake undertaking, with a return that is not immediate, and is not an open activity that can be easily monitored. In fact, it is possible to record regularly the number of lectures and measure teaching outputs by counting the total number of graduates than counting the number of times one engages in research or measuring the research outputs.

Secondly, the higher education participation rates’ argument is also a possible explanation for the heavy teaching workload in universities. Landmark studies including Bloom *et al*. (2006, 2014), OECD (2012) and Pinheiro and Pillay (2016) suggest the presence of a strong association between higher education participation rates and levels of development, giving examples of high-income countries such as Australia, Denmark, Finland, the United States, the Netherlands, Spain, Sweden, the United Kingdom and South Korea, whose higher education participation rates are over 50%. As such, many governments are committing to increasing students’ enrolment in order to improve their higher education participation rates and eventually achieve the level of development as theorised in different studies.

Countries, such as African nations, whose higher education participation rates are marginal and have rates that fall below 5% (Bloom *et al.,* 2014; Teferra, 2016), tend to increase student enrolment in their universities without taking into account other mitigating factors such as human and physical resource capacities. In consequence, the teacher-student ratio becomes wider, which in turn results in expending more attention to teaching than to research, coupled with the fact that it is easier to monitor teaching in universities than research. Understanding higher education participation rates by only increasing enrolment, without considering what kind of learning that could take place, misses an important point. As explained elsewhere in this chapter, high enrolment has a debilitating impact on research, as research tends to be subservient to teaching. In many cases, the kind of teaching that prevails in a teaching-dominated university tends not to be research-led. Research-led teaching and learning is applauded for being imperative in generating critical thinkers and innovative graduates who may promote economic growth within a nation (Healey *et al.*, 2010; Hajdarpasic *et al.*, 2013; Shin & Lee, 2015; Hermannsson & Lecca, 2016).

7.3.5 Inadequate and inexperienced human resource

Data reported in this study established a shortage of experienced academic staff within Tanzanian universities. Apart from being small, the academic workforce consisted primarily of inexperienced researchers. One public institution under review, for example, had around 70% of academic staff members who were junior academics without doctorates. A shortage of academic staff showed in this study took its toll on staff participation in research activities because the same members of staff were required to teach up to six courses per semester, in addition to administrative tasks. The findings also indicate that inadequate research skills among academic staff within universities in Tanzania also narrowed the opportunities for fully exploiting international research collaborations and networks among universities, as these staff members were reportedly incapable of developing sound research projects.

A small academic workforce coupled with a lack of experience is also a familiar phenomenon within other African countries. Cloete *et al*. (2015) found that only three among the eight flagship African universities studied had at least 20% of experienced academic staff employed in senior positions – senior lecturers,

associate professors and professors. Moreover, only three universities (Ghana, Botswana and Cape Town) among the eight flagship African universities had at least 50% of academic staff with doctorates.

Empirical studies have demonstrated the presence of a strong relationship between low proportions of senior academics and those with doctorates, and the low research productivity of the institution (Cloete *et al.*, 2015; Teferra, 2016). In other words, a low percentage of staff with doctorates and a fewer number of senior academics had a negative impact on research productivity. A strong academic workforce with well-balanced categories of academic staff enables a university to run its academic core activities more successfully, including research (Cloete *et al.*, 2015; Teferra, 2016). The category of senior academic staff is important because their research and professional experience grants them the capability to serve as research leaders and mentors of research groups, junior academic staff and doctoral students, as well as making it possible for them to attract external funding and participate in large international research collaborations and networks.

Junior academic staff and academic staff with doctorates, on the other hand, are also important – but they cannot play the part of senior academics because they are still learning. Normally, academic staff in this category would undertake research in order to improve their own qualifications (e.g., obtaining a doctoral degree, or establishing their name in the field through individual research and writing if already in possession of a doctorate).

While the current state of academic staff in Africa is discouraging, particularly regarding building of a successful research culture, the pool of academic staff members in some emerging economies – which have improved considerably their scientific research outputs in a recent decade – such as China, Hong Kong and Brazil indicates optimistic grounds for research to flourish. At the University of Sao Paulo (Brazil), for example, possessing a doctorate has been a prerequisite for securing an academic post since 1980 and currently 99.8% of academic staff in the University of Sao Paulo hold doctorates and are active academic researchers (Balbachevsky, 2016). Equally, all academic staff members in all nine Chinese research-intensive universities possess doctorates (Ma, 2013). Similarly, 80% of academic staff members in Hong Kong University of Science and

Technology (HKUST) hold doctorates and most of these staff had once worked at world-class research-intensive universities in the United Kingdom – Cambridge, Oxford and London – and in the United States – Harvard, MIT, Yale, Chicago, Stanford, UC Berkeley, Cornell and Princeton (Gerard et al., 2013). This represents quality and a wellspring of professional capital to build research collaborations and partnerships among networks of academics within and outside the country.

It is worth restating that African higher education systems, which are experiencing a lack of experienced academic staff, have a more nascent history than other higher education systems in other continents (see Chapter 2). African universities are now relentlessly participating in the production and dissemination of knowledge, because the trend for independent or private research institutions responsible for knowledge production and transfer, as in other parts of the world, is just beginning to surface in Africa (Atuahene, 2011; Cloete & Bunting, 2013). One would expect African governments and universities to expend adequate resources in order to boost the catch-up strategy in a bid to be on par with other higher education systems in the world. This could also be enhanced by adopting research-based career advancement policies, research performance-based funding systems, bifurcation university models as practised in China, Brazil, Hong Kong and other leading countries in research and scientific knowledge productivity.

In conclusion, this section has discussed the findings regarding the challenges of developing a research culture in Tanzania. The discussion has demonstrated that the challenges Tanzanian universities face affect negatively the full exploitation of international research collaborations and networks; undertaking innovative and large-scale research; delivering research-led teaching and learning; and disseminating research results beyond peer-reviewed publications – so that the knowledge generated could reach the end-users and translate into practical outcomes that the community at large can benefit from. After this discussion, the following section 7.4 concludes the chapter.

7.4 Summary and conclusions

The presentation and discussion of the findings pertaining to the challenges facing Tanzanian universities in developing a research culture in this chapter were based on the five major themes, namely fragmented connection among key research stakeholders, low level of research funding, lack of reading and writing culture, heavy teaching and administrative workload and inadequate and inexperienced academic staff. Generally, these challenges present a debilitating impact on the production and utilisation of scientific knowledge and skilled researchers, which could subsequently foster the country's socio-economic development. Amidst these challenges, the question regarding what Tanzania should do to cultivate a successful research culture in its universities was also pursued in this study. In light of this, the following Chapter 8 presents the critical factors considered essential for building a successful research culture.

8 Perspectives on Building a Successful Research Culture in Universities

8.1 Introduction

The primary research question guiding this final empirical chapter is: What does the Tanzanian higher education sector need to do to foster a prosperous research culture? This question was asked to the study's participants in order to establish a set of guidelines for devising effective policies and practices that Tanzania and other countries could adopt to build the culture of research. To this end, data collection and analysis process (see Chapter 4) resulted in five key themes, including: research training, research mentoring, research incentives, research funding and research time and space. These themes are summarised graphically in Figure 8.1 and presented in the following section 8.2. Figure 8.1 indicates a continuous sequence of tasks and events in a circular flow, which implies that each theme has the same level of importance, and that the effective attendance of one makes the other successful. Therefore, this chapter is organised into five sections that begin with this introduction, followed by a presentation and discussion of the findings in sections 8.2 and 8.3, respectively. Finally, section 8.4 summarises and concludes the chapter.

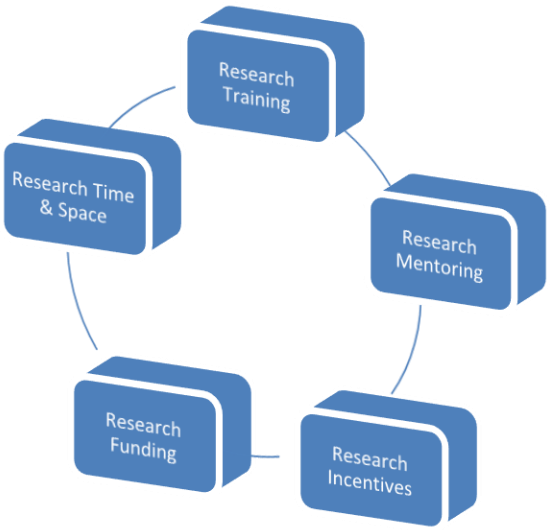

Figure 8-1 Critical Factors for Building a Research Culture in Universities

8.2 Critical factors for building a research culture

As demonstrated in Figure 8.1 (p.218), data collected and analysed regarding the perspectives on building a research culture in Tanzania's higher education system, identified five key themes. Each of the five themes are presented in this section as follows.

8.2.1 Research training

Research training was frequently mentioned as an enabling factor in building a successful research culture within Tanzanian universities. Participants who took part in this study maintained that the provision of research training for both early career and mid-career researchers is vital, especially in Tanzania, which during fieldwork had the majority of junior members of academic staff with limited research skills:

> We normally have interviews for members of academic staff from universities who vie for undertaking PhDs in Germany under the DAAD programme, we see a lot of shortcomings, and you cannot believe the work under scrutiny belongs to a university lecturer. Universities need to develop tailor-made programmes to train their staff on how to write academic and fundable research proposals. (Higher Education Officer: RS2)

This statement suggests that research requires an extensive skill set and commitment, and academic staff members and students lacked the capability of developing feasible and executable research projects. As such, universities in Tanzania should train their academic staff earlier before a Master's degree or PhD, to enable them to acquire the basics of academic writing and sail through postgraduate studies. The following statement illustrates the importance of such research training:

> The training for research should start much earlier to promote quality research and publications from the undergraduate to the master's level and later to higher levels, so that when one progresses from one level to another, one does not only have the subject content knowledge but also the research and writing skills. (Academic Staff: RS3)

This suggests that any training on research skills should begin much earlier at the undergraduate level, where one would be imbued with research skills and

research culture at an earlier stage of career or professional learning. Undergraduate research was proposed to be made a stand-alone unit of study in order to constitute an essential prerequisite for one's bachelor degree completion:

> Undergraduate curriculum should incorporate research as a separate entity… Also, the way research methods courses are being taught in our universities should be improved, they rely mainly on theoretical teaching when research skills are similar to driving skills. Thus, their mastery of research skills requires practical engagement. (Postgraduate Student: RS4)

The implication here is that the embedding of research as part of the undergraduate curriculum is considered crucial not only for the preparation of students for advancement to further studies, but also for the development of graduate skills for a range of professions. Generally, inculcating a research culture through research training for both academic staff members and students from early stages of career ensures that a prosperous research culture in higher education is evolved and sustained.

8.2.2 Research mentoring

Research mentoring emerged as another factor necessary for expediting the development of a successful research culture within Tanzanian universities. This factor was frequently mentioned by junior members of academic staff. Junior academics find it difficult to come up with a researchable topic but if there are senior lecturers somewhere guiding them and working together with these juniors, then it becomes much easier for them to lead and encourage these young staff to undertake research. The following statement captures this reasoning:

> Many of the senior academic staff members are well-established researchers in their field. Most of the time they have fundable research projects to work on while many juniors stay idle because they don't have the qualifications and skills to compete for fundable research projects and win. So, these senior academics can support these juniors and work together with them either individually or collectively, guiding them on what and how to do to become successful researchers. (Academic Staff: RS3)

It is evident that a research mentoring programme is a necessary step towards enabling further development of a successful research culture in universities because it creates continuity between experienced and novice researchers. Moreover, mentoring is also a strong strategy for addressing issues of time and capacity in order to bridge the existing personnel gap, as supported in the statement below:

> We need to start cultivating a research culture among our students and academic staff by setting a condition that each semester we should come up with at least one publication even in these local journals. (Academic Staff: RS6)

Furthermore, participants mentioned two major benefits which would result from research mentoring: enhancing research skills and leveraging research networks where the junior researchers meet and possibly work with experienced researchers. On the whole, a research mentoring programme, if conducted properly, could enhance the culture of research and allow research productivity to scale greater heights.

8.2.3 Research incentives

Participants involved in this study raised concerns about instituting research incentives that could foster the university research community's efforts and behaviours desirable for engaging and succeeding in research. During interviews, participants commented on the heavy reliance on career promotion as a dominant incentive to motivate Tanzanian academic staff to engage in research. They maintained that promotion is a conventional way of incentivising academic staff members to pursue research, and universities should not shy away from incentivising research, because research does not only constitute a package for academic staff career advancement but also helps to market the university and advance the discipline:

> There must be incentives for people who publish because they are doing it not only for their personal career development but they are also marketing the university at the end of the day. (Faculty Dean: RS5)

Participants involved in the study also suggested other research incentives such as research positions, honorary positions and pecuniary rewards, as explained in the following statement:

> We should now start thinking about having what we call academic positions like research fellows, people who are employed specifically for research purposes. (Faculty Dean: RS5)

Another participant commented on the involvement of industries for universities to generate more research funding and incentives:

> The university should try to find funding for the projects or find partners in the industry so that they can provide fund and work together with academics on projects. (Faculty Dean: RS3)

In other words, increasing the range of research incentives is necessary in order to motivate members of the university research community to engage in research and publishing results, which have the spill-over effect of advancing their respective fields of study and marketing the university through raising the institutional research profile. Providing more research incentives to universities and researchers is also an indicator of a commitment to valuing research by the government of Tanzania and the higher education sector in particular.

8.2.4 Research funding

The study has found that research needs to be provided with sufficient funding because it is one of the capital-intensive investments. Participants in this study maintained that research funding in Tanzanian universities has never been consistently provided to researchers, either by the government or by their respective universities. As such, participants further emphasised that the government of Tanzania should explicitly and unwaveringly provide research funding to universities, as illustrated through the following statements:

> The government once promised to allocate one percent of the GDP for research in universities and research institutions. But that has not happened yet. We need to implement that one percent policy for improving research productivity in our Tanzanian universities. (Director of Research: RS3)

While complaints about the low level of research funding were largely levelled by the members of the university research community and senior university leaders, senior higher education leaders at the ministry level argued that academic staff at universities could use their salaries to augment research funding. The senior ministerial leaders argued that salaries for academic staff or university teachers are relatively higher than those of secondary school and/or non-university college teachers, because universities are both teaching and research institutions, whereas secondary schools or colleges are mainly teaching institutions. Therefore, as academic staff received comparatively higher salaries, it was maintained by the senior education leaders involved in this study that members of academic staff should apportion some of the money to facilitate their research activities.

The proposition that academic staff salary should be used to fund research was strongly rejected by most members of academic staff who participated in this study. They contended that the salary was an employee's basic right that was necessary for them in order to afford a decent living. Moreover, these academics argued that although the salary was considered to be higher it was insufficient, even when it came to making ends meet because of the relatively high cost of living:

> You cannot conduct research without money… and when you compare our fringe benefits, it is really difficult for someone to use his or her money to conduct research, because the money is not even enough to sustain our monthly basic expenditures. So, we really need support in terms of funding to enable us to conduct research and attend research workshops and conferences. (Academic Staff: RS3)

Participants, in this regard, maintained that the senior education leaders and other higher education stakeholders should desist from providing weak arguments when it comes to research funding. As a result, the government of Tanzania should increase the level of funding to its universities for a sustainable culture of research to take place. The call for more research funding comes about because of the overriding need to support research activities, buy research facilities and equipment, improve internet bandwidth and connectivity, subscribe to peer-reviewed journals, and attend national and international research workshops and conferences, in order to further individual researchers' confidence, capacity and establish research networks.

8.2.5 Research time and space

Creating time and space for one to engage in research was identified as another factor that could help accelerate the development of a successful research culture within Tanzania's higher education institutions. The findings show that universities in Tanzania should introduce a research contract, whereby academic staff members can apply for one or two months' free research break (sabbatical). The contract should commit the researcher to deliver the research output at the end of the contractual period or semester, depending on the agreed upon quality and quantity of research to be delivered, with reduced teaching or administrative workloads, as the following participants explained:

> Lecturers should be given much time for research. There should also be a committee which reviews critically research proposals so that the research that is funded should be the one which can bring changes to the society and the academic community. (Faculty Dean: RS5)

Another participant added this:

> Teaching is given more priority than research. Experience shows that academics devote much time in teaching. I think the university should provide more attention to research as well. (Postgraduate Student: RS4)

The implication here is that creating time and space for members of academic staff may act as a catalyst for one to engage in research. Another strategy for creating time and space for the university research community suggested by the participants in this study included the provision of writing retreats for one or two weeks, so that academic staff could engage in research without the distractions of the university and teaching environment. Writing retreats could only be provided upon submission of one's research project or viable concept note to avoid such opportunities being wasted or abused.

Additionally, participants maintained that universities in the country should introduce a system where an academic staff is forcibly allocated time to conduct research and then they demand the output, instead of waiting for these members of staff to request for the time, as illustrated in the following statement:

> Sometimes the time is there through request, I think it should also be there by allocation. You are allocated time, let's say three weeks to do research and then the university demands the output. Of course, it can compromise conducting other essential activities but if it is like a contract you should be exempted from all other duties such as teaching or administrative.

In other words, one can willingly request for an amount of time or forcibly allotted it, the end result being to reinforce the undertaking of research and developing a research culture.

To sum up, this section as a whole has presented the findings regarding the critical factors that were seen to be essential for building a successful research culture in Tanzania's higher education system. The discussion of these findings is presented in the following section 8.3.

8.3 Discussion of the findings

This section discusses the findings on the critical factors necessary for building a successful research culture, as presented in section 8.3 and summarised in Figure 8.1 (p.218).

8.3.1 Research training

The findings of this study show that universities in Tanzania need to develop a regular and powerful tailor-made training on research supervision, research writing and scholarly publications. Participants involved in the study mentioned that training should begin at the undergraduate level and insisted on the training of junior academic staff up to the doctoral level. These findings support Stufflebeam's CIPP framework which maintains that research training and capacity development constitute a starting point for the development of a prosperous research culture in the higher education sector and nation in general. Indeed, World Bank (2011) and Kruss *et al.* (2015) maintain that the training of human resources at an advanced level of research skills creates both a foundation for skilled university personnel and a favourable condition for a country's economic growth.

The findings also align with Evans (2007) concepts of 'collegiality' and 'learnability' which are central to building individual and organisational capability and capacity in research. Collegiality facilitates members of the research community, who often possess diverse experience, knowledge and skills, to cooperate and collaborate, and thus makes it easier for promoting learning of research skills, attitudes and dispositions. Previous research in the Philippines, Ghana and China also reported on the kind of support provided towards the enhancement of research skills amongst the university research community through research training and postgraduate education (Bai, 2010; Puplampu, 2012; Quimbo & Sulabo, 2013). Reporting a dramatic change regarding the research culture from a three-year research capacity-building model in a then teaching-dominated university in Ghana (see Chapter 3), Puplampu (2012) explains that the success in transforming a teaching culture to a research culture was greatly influenced by research training opportunities, such as doctoral training and supervision and monthly research seminar and workshop series instituted within the university.

Moreover, using a survey-correlational design conducted in five universities, Quimbo and Sulabo (2013) found that educational attainment was a significant predictor of academic staff research productivity. The educational attainment at the postgraduate (PhD) level correlated with a greater confidence in undertaking research more efficiently than lower educational attainment. Quimbo and Sulabo (2013) thus call for strong research capacity-building for academic staff.

Similarly, Bai's (2010) model entitled a *Framework towards Enhancing Chinese TEFL Academics' Research Productivity (FECTARP),* developed from the findings of his doctoral study, insists on training researchers not only in research writing but also in information retrieval to leverage online resources which are increasingly relied upon in the modern era of scholarship. The FECTARP model also emphasises hands-on practices during training and the teaming up of inexperienced and experienced researchers for a sustained development of research capacity, as conducted in similar research capacity development models in England, Turkey, Australia and Scotland.

As stated elsewhere in this study, research training emerges as a crucial factor in the development of a skilled workforce. Inevitably, university graduates

engrained with research and analytical skills constitute a central resource in the advancement of the knowledge-based economies. Even the adjunct research institutions and manufacturing firms depend greatly on a successful higher education sector to draw out their personnel and expertise. Empirical evidence shows that most independent R&D institutions and manufacturing firms flourish in countries with a stable research training and dedicated PhD-producing higher education sector – mostly in Western countries (Cloete *et al.,* 2015; Shin & Lee, 2015; Pinheiro & Pillay, 2016).

8.3.2 Research mentoring

The findings reported in this study indicate that research mentoring is identified as an enabling factor necessary for encouraging the development of research within Tanzanian universities. The findings of this study established a twin pronged approach for a research mentoring programme, namely personal research mentoring and group research mentoring. Personal research mentoring is the form of a person-to-person mentoring whereby an experienced researcher would guide and advise a junior researcher over a set period of time. Group research mentoring, on the other hand, involves a team or group members who work together towards learning the skills of research writing and scholarly publishing. Under the tutelage of a research team, experienced researchers can share their research expertise with junior researchers through collaborative efforts and mentoring so that the early-career researchers can begin to build their profile and networks.

These findings regarding the importance of research mentoring are in line with the Stufflebeam's CIPP framework which insists that research-active mentors and teams are a necessary input factor for the development of a pervasive research culture among the university research community. A great deal of literature also supports research mentoring as a crucial strategy for expediting the cultivation of a research culture in the higher education sector. In a large-scale study conducted in the United Kingdom, New Zealand, Canada and Norway, Hill and Haigh (2012) found that the nurturing of research communities by experienced researchers greatly benefited junior researchers' research skills and knowledge. Likewise, Pratt *et al.'s* (1999) humanistic mentoring model involves assisting mentees both cognitively, through honing their research skills and

affectively by attending to and caring for their personal welfare (see Chapter 3). Pratt *et al.'s* research mentoring model is useful in developing a positive attitude and behaviour towards research within universities.

Furthermore, the FECTARP framework developed by Bai (2010) identifies research mentoring and emphasises the importance of implementing a mentoring programme as a continuous activity. Bai's FECTARP framework insists on formalising the mentoring programme to make it the professional responsibility of academics. This is supported by the 2006 research policy of the University of South Africa (UNISA), which formalises the role of experienced researchers in the university to support junior researchers in developing research skills through mentoring. In a follow-up study, van der Merwe (2011) found that a formal research mentoring programme was instituted and professionally implemented at UNISA since April 2009.

Mentoring at UNISA is recognised as an official duty of senior academics and as an integral part of academic staff performance assessment and promotion criteria, hence having an impact on academic staff salary increment and career advancement. The mentoring programme at UNISA involves the identification of areas for development, which is done by junior academic staff or mentees through self-evaluation. Then, the programme manager prepares a list of possible mentors available in the university and provided them with a three-weeklong mentoring workshop to polish their skills in this regard. Each mentee is then voluntary asked to approach a mentor from the compiled list, and those unable to approach possible mentors are helped by the programme manager. The mentor and the mentee enter a 12-month mentorship agreement with outlined specific objectives and outcomes.

Van der Merwe's (2011) quarterly report found a significant improvement of a research culture at UNISA as a result of this mentoring programme. In quantitative terms, the report indicates that 19 conference papers were presented and seven articles were published. The UNISA mentoring model and others communicate a strong message to the effect that any research mentoring should not be treated as a secondary activity as it is a formal, meaningful and focused endeavour aimed at enhancing a culture of research in higher education institutions.

8.3.3 Research incentives

This study has established that the provision of direct and indirect research incentives is an imperative course of action that could foster a research culture within universities in Tanzania. This finding regarding research incentives serves as an impetus, as universities in Tanzania have been incentivising their researchers through career-advancement promotion, as explained in Chapter 6. Despite being the most used and relied on form of incentive, the career-advancement promotion has been found less effective in encouraging a research culture and productivity of academic staff. Participants involved in this study viewed the career-advancement promotion as conventional and unmotivated. The participants, in this regard, called for more forms of incentives, such as managerial position promotions (e.g., head of department), pecuniary incentives and crediting active researchers in university events.

The call for more research incentives is consistent with Stufflebeam's CIPP framework, which states that rewarding active and outstanding researchers creates a platform for fostering a successful research culture. Data presented in this study also support previous research that underscores the fact that research incentives and benefits stimulate academic staff members to undertake research. In the Philippines, forms of incentives used to encourage research activity were credit load, honorarium and equipment support, such as computers, in which their actual receipt has made a significant contribution to the research output of academic staff members (Quimbo & Sulabo, 2013).

In South Africa, a study conducted in five universities found that there are various incentive schemes designed to incentivise research for both junior and senior academic staff members (Cloete & Bunting, 2013). The most common incentive scheme provided includes direct monetary incentives – up to USD 2,400 for a single-authored paper – remitted to college and individual academic staff based on their research output. Other incentive schemes include a fee reduction up to 100% for postgraduate research students, postdoctoral fellowship opportunities, rewards for supervisors of successful Master and doctoral graduates, and publishing a list of the top 30 academics with higher research output in the university's annual research report. These incentive schemes, among others, have made South Africa the leading country with the best

universities and economy in Africa (Kruss *et al.,* 2015; Cloete *et al.,* 2015; Bothwell, 2016). South Africa contributes the largest share of the amount of scientific research outputs and the highest number of the best universities from Africa, in *the UNESCO's (2015) Science Report* and *the 2016 Times Higher Education World University Rankings* respectively. The implication is that a variety of incentive schemes needs to be in place in order to encourage and enhance a successful research culture in higher education institutions.

8.3.4 Research funding

This study has identified research funding as a key driver of a successful research culture in higher education institutions. This finding is in accord with the Stufflebeam's CIPP framework guiding the study, which stresses that a sustained research funding is a necessary input in strengthening research capacities in universities. This finding is also in agreement with other findings in previous studies. More research funding was found to be critical in enhancing the capability and latitude of higher education institutions in order to develop a culture of research in studies that determined processes and strategies that universities in OECD countries pursue to promote research (Hazelkorn, 2005; Shin & Lee, 2015; Huber, 2016). Similarly, academic staff members and university leaders affirmed that more research funding would be needed to create a flourishing research culture in Southern and Northern African universities (Cloete & Bunting, 2013; Trotter *et al.,* 2014; Cloete *et al.,* 2015).

The demand for more research funding in Tanzania is borne out of the fact that the government of Tanzania has been inconsistent in providing research funding to the country's universities. The Tanzanian government remits limited research funding to universities that pass through COSTECH (the Commission for Science and Technology), which is largely problematic and unable to deliver the desired goods (see Chapter 6). The government of Tanzania also indirectly includes research funding in the annual university budget remitted to public universities based on student unit cost. As the findings of this study reveal, the inclusion of research funding in the general university budget is largely unreliable and counter-productive, because senior university leaders tend to apportion funds for research from the pool of annual university budget only when satisfied that

the funding for other university activities such as teaching was sufficiently allocated.

In order to develop a successful research culture in universities, many governments and universities around the world are increasingly diversifying their funding systems by allocating special funding for research in addition to the general funding allocated to universities. Germany, Spain, Italy, Taiwan, Korea, Japan, Malaysia and Singapore use special funding to fund science and innovation which have improved the research excellence and productivity in these countries' universities (Shin, 2013; Heyneman & Lee, 2013; Huber, 2016). In fact, adequate funding is needed for a successful research environment in universities in order to establish high-quality laboratories, state-of-the-art libraries with a subscription to key local and international journals as well as the fastest internet connections, to facilitate communication and access to diverse teaching and learning materials.

8.3.5 Research time and space

The present study has identified time and space as an enabling factor in fostering university research. Participants involved in the study explained that since time has persistently been used as an excuse by a vast majority of academic staff members, universities should create time by reducing the teaching and administrative workloads for these staff, in order to allow them to engage in research, scholarly publishing and self-development research undertakings. Two major suggestions were made during fieldwork: firstly, the use of sabbaticals and/or lessening teaching assignments in one semester, while requiring academic staff members to produce the set amount of work agreed on in relation to research output. The sabbatical research contract is an effective stimulant to fostering research, because one voluntarily decides to engage in research at a particular time rather than be coerced to do so (Bai, 2010; Nguyen, 2016).

Secondly, the use of writing retreats appears imperative to furthering the institutional research culture in the present study. Writing retreats accord the university research community ample time and space to concentrate on their research projects. The need and benefits of research writing retreats is also

reported on in many other studies. Three types of interventions: writing coaches, writing courses and writing support groups, were reported to increase research outputs of the participants in the United Kingdom, New Zealand, Australia, the United States, Canada and Norway (McGrail *et al.,* 2006; Stephens *et al.,* 2011; Hill & High, 2012).

Equally, previous research conducted in Ghana, South Africa and China found that research writing support and workshops sparked interest and the confidence of academic staff to undertake research (Bai, 2010; Puplampu, 2012; Cloete & Bunting, 2013; Johnson & Louw, 2014). Puplampu (2012), for example, reported a case study on the practical development of a research culture in a Ghanaian private-owned university, where a three-year intervention on writing retreats, coaching, regular research seminars, accompanied with listening to personal success stories of accomplished researchers, improved considerably the research productivity and the research culture in general of academic staff members (see Chapter 3).

Similarly, Bai's (2010) *Framework towards Enhancing Chinese TEFL Academics' Research Productivity (FECTARP)* encourages universities to provide more time for research to academic staff through writing retreats and research vacations. Bai's (2010) FECTARP model emphasises that the weight for teaching loads in a year is made to 3/2, in which academic staff members handle 3 courses in the first semester and 2 courses in the second semester, rather than 3/3 or 4/4 or some heavier workload. Under the 3/2 teaching load, more weight is given to the first semester than the second in order to give the academic staff member some reprieve. This 3/2 workload is also applied in the United States, particularly in higher education institutions that seek to strike a balance between teaching and research.

In summary, a discussion of the findings regarding the critical factors for building a successful research culture in Tanzania has been provided in this section. The discussion has established a set of guidelines to guide the development of effective policies and practices necessary to build a research culture in Tanzania and elsewhere. The following section 8.4 summarises and concludes the chapter.

8.4 Summary and conclusions

The chapter has presented and discussed the findings on the critical factors necessary for building a prosperous research culture in Tanzania. These include: research training, research mentoring, research incentives, research funding and research time and space. By presenting these critical factors, the chapter has established a framework for making decisions and guiding action in efforts geared towards developing a successful university research in Tanzania and other nations in the world. As such, the following Chapter 9 concludes the study by providing a summary, the conclusions and recommendations for policy and praxis, as well as for further research.

9 Summary, Conclusions and Recommendations

9.1 Introduction

This chapter presents a summary, conclusions and recommendations of the present study. The chapter is divided into seven sections. Following this introduction to the chapter, is the aim of the study in section 9.2. Section 9.3 summarises the major findings. The contribution made by the study – both the theoretical and practical contributions – is presented in section 9.4. Section 9.5 highlights the limitations of the study, followed by section 9.6, which offers both theoretical and practical recommendations based on the study's findings and discussion. Finally, section 9.7 concludes the thesis.

9.2 Aim of the study and research questions

The study reported in this thesis investigated approaches which the higher education sector in Tanzania employs to develop a research culture. In particular, the study sought to answer the following four research questions:

1. How does the national higher education policy context influence the development of a research culture?

2. In what ways do higher education institutions develop a research culture?

3. What challenges do higher education institutions face in developing a research culture?

4. What does the Tanzanian higher education sector need to do to foster a prosperous research culture?

9.3 Major findings of the study

Presentation of the findings in the present study has been organised according to the study's four major research questions. A summary of the major findings for each primary research question is presented in the following four subsections:

9.3.1 Influence of the national higher education policy context on the development of a research culture

The national higher education policy has greatly, particularly at the level of articulation, influenced the development of a research culture in Tanzania's higher education sector. Research in Tanzania is accorded a high status on the national policy agenda and is considered a panacea for improving the socio-economic development. As a consequence, Tanzania has instituted the National Research and Development Policy in a bid to advance university research. The National Research and Development Policy is, nevertheless, without limitations, as it strives to accommodate both the higher education institutions and the independent or non-university research institutions, which in the long run makes the university research activity unmanageable due to lack of proper funding and other necessary infrastructures. In fact, the policy has had limited effect in ensuring that research is not only accepted but also valued and engaged with accordingly by members of academic staff and Tanzania's HEIs in general.

Similarly, the national higher education policy directs all the universities operating in Tanzania to incorporate research as one of their primary university functions, in addition to teaching and community service. As such, research is one of the prerequisites for a university's accreditation and the career advancement of university academics within Tanzania. This implies that all universities in Tanzania operate under the homogeneous university model, combining research, teaching and community service, regardless of their establishment.

Inevitably, there are some concerns that this study has observed in Tanzania's emphasis on the homogeneous university model against the backdrop of the country's low-income status engendered by a poor economic base. The reality is that the homogeneous model of research-only university requires an intensive investment, which is why developed economies embrace a bifurcation model accommodating both teaching and research universities. This study has demonstrated that research in Tanzanian universities receives little funding, as there is no special allotment of research funds to universities. This research funding shortfall has reduced universities in Tanzania to teaching-only institutions, despite the country professing the research university model

primarily as they lack the required infrastructures and other requisite resources to operate as research universities.

Moreover, the higher education policy context in Tanzania does not substantiate the type of research that it refers to, and the kind of expenses and energy that are required to enable the effective and efficient undertaking of research in universities on a sustainable basis. In consequence, research is merely conceptualised as the process of collecting data with the end result being the production of a report or a publication based on the research findings. Such a conceptualisation of research overlooks the utilitarian value of the research knowledge and the impact of the research knowledge on the community. This orientation has created a gap between research and industry when meaningful development is dependent on a symbiotic relationship between the two.

9.3.2 Approaches used to develop a research culture within Tanzanian universities

The study has established several approaches that universities in Tanzania employ to develop a research culture. The first approach relates to the development of research structures by establishment a number of research offices (e.g., the Deputy Vice-Chancellor for Research and the Directorate of Research and Publications), instruments for good practice in research (e.g., Research Ethics Policy and Intellectual Property Policy), and the integration of research into the university's mission and academic staff career advancement path. The establishment of these research structures is borne out of these universities' recognition that research requires much focus, space, supervision and guidance.

Nevertheless, this study has advanced misgivings regarding whether the structures created are capable of bringing significant impact on developing a sustained culture of research. It also remains unclear what actually constitutes the research structure. For example, what instruments for good practice in research and research offices should be doing and how compliance with their research functions could be enforced. Also, the universities under study do not operate under the two-tier system of university leadership where teaching and research are separately lead and managed within a single institution. The two-

tier system of university leadership is currently a global trend that has achieved a good result in uplifting the research portfolios of many universities in the world, including those of South Africa, an African country with a more distinguished research track record within sub-Saharan Africa.

The second approach constitutes reinforcing desirable research behaviour among the university research community using different incentives and punitive measures such as career promotions, managerial position promotions, pecuniary incentives, sabbaticals, postgraduate (doctoral) research supervision and relegation. All of the four universities under review require their academic staff members in different designations to have a number of refereed publications to their name to qualify for promotion and for them to rise through the career ranks – failure of which may result in re-categorisation. Although there is a provision that requires the termination of the employment contract of inactive researchers, this penalty is hardly enforced, as many of these members of academic staff remain in one designation for decades due to lack of research-based publications.

The third approach involves research capacity development which is characterised by the running of various Master and doctoral programmes, as well as professional development programmes such as research and academic writing workshops and seminars for the university research community. This study established however that the professional development programmes were conducted occasionally and the postgraduate training was largely dominated by Master programmes, something which creates a limited foundation for the development of the universities' and country's human resource equipped with advanced research and critical skills to propel research towards the much-needed socio-economic development.

Another approach is supporting the dissemination of research results through the financing of the publication of in-house journals of the institution and granting leave for academic staff members to participate in research dissemination gatherings, such as conferences and workshops at both local and international venues. Budget austerity, nonetheless, tends to limit the financial support that universities extend to these types of activities. Indeed, the support to research dissemination activities focuses greatly on scholar-to-scholar communication. It

overlooks the scholar-to-government, scholar-to-industry and scholar-to-community knowledge communication, which is also significant in ensuring that the research-based knowledge produced at the university is disseminated beyond the academic audience and channelled to the industry through incubation and finally mass production (knowledge valorisation) in order to improve the everyday living standard of the citizenry.

The fifth approach used to develop a research culture within Tanzania's HEIs is research collaboration and networking. All of the four universities under study collaborated and networked with other universities largely from overseas, with the aim of elevating their research profiles and visibility. These research collaborations and networks have helped to enhance the exchange of experts and expertise, sharing of learning materials and infrastructure such as IT services and library resources, enhancing research skills and conducting international research projects. These achievements notwithstanding, some bottlenecks such as inexperienced academic staff and undeveloped intellectual property systems, were found to hinder the effective utilisation of the research collaborations and networks previously established.

9.3.3 Challenges of developing a research culture

The study has found a number of challenges that Tanzanian universities face in developing a research culture. The first challenge is a fragmented connection among key research stakeholders in the country, particularly the triple helix: universities, the government and the industry and wider community as well. Information on the research-based knowledge generated from universities, for example, was not readily available at the institutional, community and even national level. Much of this research, if not published in peer-reviewed publications, ended up gathering dust as grey literature on the shelves of the researcher only. There are no comprehensive institutional or national repositories documenting the research conducted at higher education institutions let alone the impact of university research on the Tanzanian community. This challenge has resulted in difficulties regarding the proper funding, disseminating, supporting and monitoring of university research in Tanzania.

Furthermore, heavy teaching and administrative workload presents another daunting challenge. Academic staff members have been forced to grapple with the teaching, administrative and research responsibilities. The third challenge is a shortage of experienced human resource – particularly academic staff – hence the over-reliance on inexperienced faculty with little or no research credentials. Indeed, a high percentage of the academic staff workforce in Tanzania consists of junior staff in the process of completing their doctorates, or those in possession of Master degree who are required to boost their academic credentials by pursuing doctoral studies. A shortage of academic staff members and their limited research skills restricts their capacity and readiness to participate in innovative research as well as participate effectively and confidently in national and international research collaborations and networks. Additionally, the low level of research funding is another stumbling block. Research funding in Tanzania is heavily dependent on donors and individual academic self-funding. This low level of research funding tends to result in the undertaking of small-scale research projects that on the whole often lack serious scholarship.

Another challenge is the absence of a professional reading and writing culture among the majority of the university research community (academic staff and students inclusive), something that in turn undermines their writing aptitude. This study maintains that the culture of academic literacy (reading and writing), and finally a research culture, does not begin or end with an individual member of academic staff. The community and the government at large cannot be detached from the equation, as a culture of academic literacy congregates into shared values and beliefs regarding the significance of knowledge in enhancing the standard of living as perceived by academic staff members, students, university management, community members and the government (Evans, 2007; Shin & Lee, 2015; Jiang *et al.,* 2015). This implies that the professional reading and writing culture of the university research community could be intensified, if the community and the government at large believe that research activity and research-based knowledge can facilitate their nation's socio-economic development.

9.3.4 Critical factors for building a research culture

Based on the research undertaken, this study has established a number of critical factors for building a successful research culture including research training, research mentoring, research incentives, research funding, research time and space. Under research training, participants involved in this study maintained that the provision of research training for both early career and mid-career researchers is vital, and it should begin at the undergraduate level, where one would be imbued with elementary research skills which mark an induction into career or professional learning, before research skills are consolidated at the higher (doctoral) level of learning. Research mentoring was identified as another factor crucial in furthering the development of research in Tanzanian universities. Two major benefits which would result from research mentoring were established: enhancing the research capacity of the university research community and introducing individuals, particularly junior researchers, to networks of the research community, both local and international.

Furthermore, the study identified research incentives as another enabling factor that could foster the university research community's actions and behaviours desirable for engaging and succeeding in research. They suggested that, in addition to career advancement promotion, universities should commit to more incentives such as research positions, honorary positions and pecuniary rewards. Similarly, the participants mentioned that creating the time and space for researchers in order to engage in undertaking research was another factor that could help promote a culture of research. These participants maintained that academic staff members should be given sufficient time and space in order to engage in research through the provision of academic vacations/sabbaticals and writing retreats based on agreed contractual conditions.

9.4 Contribution of the study

In light of the findings and discussion presented thus far, this study can make the following theoretical and practical contributions to the development of a research culture in African universities:

9.4.1 Theoretical contribution

The study has made an original contribution to the body of knowledge in the academic area of research culture in higher education, by establishing a comprehensive empirically based understanding of how university research is being developed in the non-Western world, particularly within Tanzania. It is worth restating that, the present study is the first of its kind to be undertaken in Tanzania, a country in sub-Saharan Africa where there is a dearth of such studies thus far.

The study has also filled a knowledge void regarding why African countries, and Tanzania in particular, perform insignificantly in the production and application of research-based knowledge as established by previous research (Cloete *et al.*, 2015; UNESCO, 2015; Teferra, 2016). It has done so by advancing major approaches used to develop a research culture and discussing limitations that make the approaches employed less effective in developing a successful research culture within higher education institutions.

The study has also established that it is problematic to develop a research culture in higher education institutions when there is an incompatibility between the national or government policy and the higher education institutions' ambitions and strategies. Indeed, the study has found that there is a mismatch between the elevated status, which research secures in the Tanzanian government policy and the kind of energy and expenditures expended on developing research in the country's higher education institutions.

The study has also demonstrated how research is generally being understood and conceptualised in the context of developing countries, particularly Tanzania. As such, it provides the basis for informing policy-makers and other higher education-related stakeholders on what should be done to improve the understanding of research and the kind of expenses and energy needed to develop university research that is impactful. Research was generally understood as undertaking scientific investigations and publishing the results in scientific publication platforms such as journal articles and books. The practical application of research-based knowledge that would make the impact of

research felt in the wider community and bolster socio-economic development, was generally excluded from the equation.

The study has also made a methodological contribution by underscoring the fact that an empirical study, such as the present one, that studies a research culture in higher education – which is not a one-off activity – is best studied and could produce more robust and trustworthy data when the researcher employs data generation methods which favours mixed methods involving documentary analysis and empirical research. Contrary to many related studies reviewed in Chapter 3, which employed only the interview method during data collection (e.g., Taylor, 2006; Fenwick, 2012; Edgar & Geare, 2013; Nguyen, 2016), the present study has employed both the interview and group discussion methods that allowed for interaction with human participants. The addition of the documentary review method permitted the interaction with documents to generate more knowledge and evidence regarding human behaviour, decisions and strategies – relating to the development of a research culture in Tanzanian higher education system – developed and practised over time. The result is a comprehensive study that has explored different dimensions of the research problem identified.

9.4.2 Practical contribution

The study has made a practical contribution by generating knowledge from the study's findings and recommendations that can be used to devise effective higher education policies and practices necessary for creating a more flourishing research culture in Tanzania and other countries. This is particularly relevant to developing economies with similar demographic, social, cultural and economic characteristics. Moreover, the study has highlighted critical factors for building a successful research culture, such as research training, research mentoring, research incentives, research funding and research time and space (see Figure 8.1, p.218), which serve as a framework for higher education institutions and researchers within Tanzania and across the world to guide their decisions and actions in the efforts to promote a sustainable research culture.

9.5 Limitations of the study

Similar to any other empirical investigations, there are some limitations associated with the research reported in this thesis. As with many other qualitative studies, a small sample of 79 participants was employed in this study, making it difficult to generalise the findings beyond the scope of the study. This study, nevertheless, provides an in-depth understanding of how the higher education sector in Tanzania is seeking to develop a research culture, which could probably not be possible through other research designs. Therefore, based on the inclusion of a variety of research participants, research cases/sites and the detailed interpretative analysis and understanding provided, the findings of the present study may be transferable, relatable and applicable to other higher education institutions in developing countries with similar demographic, cultural and socio-economic characteristics to those obtained in Tanzania.

Furthermore, the absence of comprehensive national and institutional repositories on university research during fieldwork constrained the acquisition of research-related information from both the national and institutional level that could have enhanced the trustworthiness and reliability of the study's findings. For example, it was difficult to obtain information on the key sources of research funding for research-based publications of each academic staff member in the universities under study. The aforementioned research-related information could have been useful in gauging the effectiveness of the nascent approaches used to develop a research culture in Tanzanian universities. However, in order to mitigate this limitation and eventually generate a rich and credible data set, the present study employed a triangulation strategy of data collection that involves three forms: methodical triangulation, data source triangulation and site triangulation (see Chapter 4).

9.6 Recommendations

Based on the study's findings and discussion presented thus far, the following two types of recommendations are made: recommendations for policy and action, and recommendations for future research.

9.6.1 Recommendations for policy and action

9.6.1.1 For the government of Tanzania

Firstly, the national higher education policy needs to be reformed in order to adopt a bifurcation university model whereby two types of higher education institutions can be developed and adequately supported by the authorities. One possible way is to identify the country's flagship universities as research-intensive universities, and designate others to the teaching universities and community-oriented universities as practised in other countries such as the United States, the United Kingdom, Australia, China, Korea, Hong Kong, Malaysia and Thailand. With time, these other universities can then gradually mature into research universities, as they develop their respective capacities and raise their profile rather than simply possessing a blanket term of 'research university' – even for those ill-qualified to be called so when their role is mainly to serve as teaching institutions.

Nevertheless, it should be emphasised that a university placed in the teaching and community college category needs to also incorporate research even on a limited scale in order to avoid diluting the scope of such entities as established over the ages. Although these universities should not be expected to deliver or engage in research at the same level and capacity as a research university. On the whole, the route to research-intensive university should be merit-based and competed for by every university. In this way, "[e]stablished and up-and-coming institutions will 'all rise with the tide' with new attention paid to research and research-based teaching, but weak and profit-oriented 'degree mills' with no interest or motivation in developing research capacities will face natural attrition" (Kian-Woon *et al.*, 2010, p.53).

Secondly, there is a need to reform the national research and development policy in order to stipulate precisely the functions of universities and non-university research institutions, and appropriately define research by factoring in research utilisation and impact aspects, and identify the energy and expenses that research reasonably requires for its flourishing. Empirical studies have found that university research is well managed and fostered when higher education institutions and non-university research institutions are managed

separately, because the two do not compete with each other for funding and other infrastructures (Altbach, 2013; Cloete *et al.,* 2015).

Thirdly, there is a need to establish special funding for research directly from the government, instead of decentralising the authority to the senior university leaders whose research funding allocation may greatly depend on their affinity for research. In addition, the Ministry of Education and Vocational Training should institute research performance-based funding for higher education institutions in Tanzania. Governments of countries such as Australia, the United Kingdom, New Zealand and the Netherlands have managed to convert most of their higher education institutions from teaching institutions into much-acclaimed research institutions through the use of the research performance-based funding (Edgar & Geare, 2013; Heyneman & Lee, 2013; Jongbloed & Lepori, 2015; Huber, 2016). Indeed, research performance-based funding system tends to encourage competition among universities, researchers and academic staff members and enhance excellence in research, knowledge production and valorisation.

Fourthly, every doctoral graduate should translate his or her doctoral dissertation into Kiswahili and submit it to the Ministry of Education and Vocational Training. Also, this doctorate can retain with one copy of translated PhD dissertation or thesis for knowledge valorisation activities with a non-academic audience in industries and rural areas.

Fifthly, there is a need to promote the mutual relationship among the universities, the government and the industry which is regarded to be central in steering the country's success in knowledge valorisation. This should go in tandem with setting up of a higher education management information system (HEMIS) that could collect and store data on higher education for co-ordination and monitoring purposes.

9.6.1.2 For Tanzania's higher education institutions

Firstly, there is a need for Tanzanian universities to subscribe to the two-tier leadership profile in order to enhance the management of research and teaching or academic separately. The current system of managing human resources within

Tanzanian universities focuses primarily on academic or teaching issues. As such, human resource managers and university leaders should be aware of leading people in research environment. In this regard, there should be a head of the department for research and another for teaching, the College or School or Faculty Dean for research and another for teaching, the University Director of Research and another for teaching and the Deputy Vice Chancellor (DVC) for research and another for teaching. The two-tier system of leadership at the university level has marked success in uplifting the research portfolios of many countries' universities, such as those in South Africa within the African context.

Secondly, there is a need to formulate and implement viable institutional research policies and Intellectual Property systems in order to provide guidance in undertaking ethically-informed and nationally relevant research agendas, and to protect the rights and efforts of institutions and researchers.

Thirdly, there is a need to incentivise accordingly active researchers and encourage more institutional and international research collaborations. Similarly, universities should comply with the provision in the institutions' policy guidelines that requires them to dismiss academic staff members who have overstayed in one designation for more than nine years without promotion and justifiable grounds. In fact, a successful research culture cannot be fostered in a penalty-free environment for underperformance in research (Lewis & Simmons, 2010; Nguyen, 2016).

Fourthly, there is a need to develop a research-focused undergraduate curriculum and simultaneously enhance postgraduate education. All of the Tanzanian universities should integrate research into undergraduate programmes and improve the delivery of postgraduate research courses. They can also make compulsory the production of a single peer-reviewed article out of a student's coursework. Formal research training through undergraduate and postgraduate courses and the supervision of research students is a dominant inherent approach employed to promote an engrained research culture among successful research universities worldwide (Cloete *et al.*, 2015; Teferra, 2016).

Fifthly, there is a need to support academic staff financially and intellectually to publish and disseminate their research findings to both the academic and non-

academic community. Accordingly, universities should train and motivate academic staff members to use Web 2 technologies such as ResearchGate, Wikipedia, Facebook and Twitter, in order to disseminate their research outputs so that it can reach a broader and distant audience.

Universities should also establish an office or a section within the Directorate of Research office which can deal with the exploitation, understanding and condensing the peer-reviewed research output produced by the university scholars into accessible and understandable policy briefs for a non-academic audience such as government officers and the community members.

Moreover, universities should establish institutional research repositories for depositing the university research output and upgrade the institutional websites to encompass, among others, academic staff names, research interests, titles of their scholarly publications and professional memberships.

Universities should also institute a formal mentoring programme as practised at the University of South Africa (UNISA) where mentoring is identified as an official duty of academics and an integral part of academic staff's performance assessment and promotion. In addition to the formal mentoring programme, universities should provide academic vacations (sabbaticals) based on agreed upon contractual terms whereby an academic staff member is provided with time and space to undertake research.

Finally, universities in Tanzania should form a body that unites all Tanzanian universities equivalent to *Universities UK* and *Universities Scotland* to represent the voice and interests of the country's universities, strengthen internal collaborations, support each other to realise their aims and goals, maintain and improve the standard of university research and the higher education sector in general.

9.6.2 Recommendations for future research

Future research could investigate a topic similar to the present one using a mixed-method approach to extend the understanding of how the higher education system within Tanzania strives to develop a research culture. Such a

study could cover a larger number of universities and respondents across the country. Studies of this nature are welcomed because the topic of research culture in higher education as an emerging field of enquiry is not only relevant at the domestic level but also at the global level.

Similarly, further research could examine the influence of leadership and leadership styles on the development of a research culture within higher education institutions. The organisational theory literature and some of the studies such as Pratt *et al.* (1999) and Puplampu (2012), reviewed in the present study on research capacity building models, found that leadership and leadership styles are among the key elements in changing the behaviour of employees.

Future research could also explore what researchers at the university level are doing to disseminate their research results beyond the scope of peer-reviewed publications in order to reach a broader audience outside of academia, who need to apply those findings in real-life and everyday practical situations.

9.7 Thesis conclusion

This study has investigated approaches used to develop a research culture in Tanzania's higher education sector. Tanzania is found in Africa, the continent that is ranked the lowest in the world for research output and number of researchers. Africa is also characterised by a low level of economic development when compared with other continents in the world. The only imperative way for the African continent in general, and Tanzania in particular, to enhance its socio-economic development is to get involved profoundly in the production, transmission and application of knowledge. Nonetheless, this study has found that the policy initiatives and strategies used to develop a research culture within Tanzania's higher education sector were not sufficiently to build institutional research capacity and bring about such desired social, cultural and economic changes and improve the livelihoods of Tanzanians and beyond.

This study, therefore, argues that Tanzania needs to develop an engrained research culture in its higher education system, to be able to produce and apply research-based knowledge and critical personnel capable of serving both in the public and private sectors within the country. In the absence of a deep-seated

research culture, Tanzania may struggle to translate into the reality the National Development Vision 2025, through which the country envisages advancing from the status of ‘less developed’ country to a respectable ‘middle-income’ country.

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Appendices

Appendix A: Interview Guide with the Director of Higher Education

1. One of the Directorate's functions is to promote and facilitate research activities in higher education institutions. How does MoEVT define a higher education institution? And, how does it define research?

2. In general, the mission of HEIs/universities are teaching, research and service. Does MoEVT prescribe the differentiation of the university mission in Tanzania? E.g., teaching-only, research-only or a combination of both?

3. What is the MoEVT's stipulation of the career structure of university academic staff?

4. In other countries, resources/funds for research are made available on a competitive basis throughout the higher education sector according to institutional performance. What about Tanzania? How resources for research are made available to higher education institutions? / Modality of funding?

5. A higher education institution (HEI) which encourages its academic staff to engage in research will formulate research policies, which among others, set research priority areas over a planned period and use attracting funding. Do HEIs in Tanzania have research policies? If they have, to what extent are the existing research policies viable to fostering a research culture?

6. In what ways does MoEVT develop a research culture in HEIs? Can you share some examples? Do the approaches indicate viability i.e., improvement of university/faculty research productivity? Evidence?

7. Does MoEVT require HEIs to bring reports on the impact of their research in order to make an assessment on their growth, worthiness and sustainability?

8. One of the Directorate's functions is to promote public awareness of functions and roles of the higher education sector. How does the Directorate go about implementing this?

9. What other factors which the Directorate think are vital for promoting a successful research culture in the Tanzanian higher education sector? What should the HEIs do to bolster a research culture?

10. What are the current challenges facing higher education institutions in Tanzania in relation to developing a research culture?

Appendix B: Interview Guide with Senior Accreditation Officers

1. TCU is a body corporate mandated to register and accredit higher education institutions (HEIs) operating in Tanzania. How does TCU define a higher education institution?

2. In general, the mission of HEIs/universities are teaching, research and service. Does TCU prescribe the differentiation of the university mission in Tanzania? E.g., teaching-only, research-only or a combination of both?

3. TCU is mandated to recognise and accredit Tanzanian universities. What are the criteria that TCU used to accredit universities?

4. Do existing accreditation criteria take research into account? If yes, how is it checked?

5. What is the TCU's stipulation of the career structure of academic staff?

6. What are the procedures adopted to evaluate academic staff in Tanzania?

7. Do existing academic staff assessment criteria take research into account? If yes, what weight does research have on decisions about academic staff's career advancement path?

8. If yes in 7 above, how does TCU define research that should be conducted by Tanzania's HEIs and their staff?

9. How does TCU ensure the procedures adopted to evaluate academic staff are thorough and uniform across all HEIs in the country?

10. Among others, TCU is mandated to solicit for and distribute funds among universities, how does TCU fund HEIs/modality of funding? Is research a priority/separate funded?

11. A HEI which encourages its academic staff to engage in research will formulate research policies, which among others, set research priority areas over a planned period and use attracting funding. Do HEIs in Tanzania have research policies? If they have, to what extent are the existing research policies viable to fostering a research culture?

12. In what ways does TCU develop a research culture in HEIs? Can you share some examples? Do the approaches indicate viability i.e., improvement of university/faculty research involvement and output? Evidence?

13. What other factors which TCU think are vital for promoting a successful research culture in the Tanzanian higher education sector? What should the HEIs do to bolster a research culture?

14. What are the current challenges facing higher education institutions in Tanzania in relation to developing a research culture?

Appendix C: Interview Guide with Deputy Vice Chancellors

1. In general, the mission of universities is teaching, research and service. What is the status of your institution? E.g., teaching-only, or it combines both teaching and research?

2. Which procedures did your institution engage to fulfil accreditation requirements at TCU?

3. How is the career structure of academic staff at your institution organised? And, what are the procedures adopted to evaluate academic staff?

4. Do existing academic staff assessment criteria take research into account?

5. If yes in 4 above, how does your institution define research that should be conducted by your academics? And what form/kind of research does your institution take into account in the existing structure of academic staff assessment?

6. If yes in 4 above, what weight does research have on decisions about academic staff's career advancement?

7. If research is included, which obviously will be in the form of publications, among others, how does your institution ensure the quality of the publications, such as books, book chapters, journal articles, across different schools and departments? E.g., articles used for promotion across all academics are only those published in quality/accepted journals, and academics do not duplicate or plagiarise.

8. Does your institution have any statement on the impact of research – tracking the impact of your research, and creating a database/repository to store research reports from your academics?

9. In other countries, resources/funds for research are made available on a competitive basis throughout the higher education sector according to institutional performance. How research funding is provided to Tanzanian higher education institutions?

10. What other sources of fund, particularly for research your institution receive? And, how resources/funds for research are remitted to your academics?

11. A HEI which encourages its academic staff to engage in research will formulate research policies, which among others, set research priority areas over a planned period and use attracting funding. Does your institution have a research policy? If it has, to what extent is the existing research policy viable to fostering a research culture in your institution?

12. In what other ways does your institution develop a research culture to your academics? Can you share some examples? Do the approaches/strategies indicate viability, i.e., improvement of university/faculty research productivity? Evidence?

13. What are strategies employed by academic staff at your institution to disseminate the research findings beyond peer-reviewed publications?

14. What other factors which you think are vital for promoting a successful research culture in the Tanzania's higher education sector? What should the HEIs do to bolster a research culture?

15. What are the current challenges facing higher education institutions in Tanzania in relation to developing a research culture?

Appendix D: Interview Guide with Directors of Research and Publications

1. In general, the mission of universities is teaching, research and service. What is the status of your institution? E.g., teaching-only, research-only, or it combines both teaching and research?

2. How is the career structure of academic staff at your institution organised?

3. What are the procedures adopted to evaluate academic staff?

4. Do existing academic staff assessment criteria take research into account?

5. If yes in 4 above, how does your institution define research that should be conducted by your academics? And what form/kind of research does your institution take into account in existing academic staff assessment?

6. If yes in 4 above, what weight does research have on decisions about academic staff's promotions and career advancement?

7. If research is included, which obviously will be in the form of publications, among others, how does your institution and your office, in particular, ensure the quality of the publications, e.g., books, book chapters, journal articles across different schools/colleges/faculties/departments in the institution? E.g., articles used for promotion across all academics are only those published in quality/accepted journals, and academics do not duplicate/plagiarise and other things like protection of human and environment.

8. In other countries, resources/funds for research are made available on a competitive basis throughout the higher education sector according to institutional performance. What about Tanzania? How resources for research are made available to higher education institutions? / Modality of funding?

9. What other sources of fund, particularly for research your institution receive?

10. A HEI which encourages its academic staff to engage in research will formulate research policies, which among others, set research priority areas over a planned period and use attracting funding. Does your institution have a research policy? If it has, to what extent is the existing research policy viable to fostering a research culture in your institution?

11. In what other ways does your institution develop a research culture to your academics? Can you share some examples? Do the approaches/strategies indicate viability i.e., improvement of university/faculty research productivity? Evidence?

12. What are strategies employed by academic staff at your institution to disseminate the research findings beyond peer-reviewed publications?

13. What other factors which you think are vital for promoting a successful research culture in the Tanzanian higher education sector? What should the HEIs do to bolster a research culture?

14. What are the current challenges facing higher education institutions in Tanzania in relation to developing a research culture?

Appendix E: Interview Guide with the Faculty Deans

1. What is the mission of your institution? E.g., teaching-only, research-only, or it combines both teaching and research? Does the university mission in Tanzania differentiated?

2. What are the procedures adopted to evaluate academic staff?

3. Do existing academic staff assessment criteria take research into account? If yes, what weight does research have on decisions about academic staff's promotions and career advancement?

4. If yes in 3 above, how does your institution define research that should be conducted by your academics? And what form/kind of research does your institution take into account in existing academic staff assessment?

5. If research is included, which obviously will be in the form of publications, among others, how does your institution and your office, in particular, ensure the quality of the publications, e.g., books, book chapters, journal articles across different schools/colleges/faculties/departments? E.g., articles used for promotion across all academics are only those published in quality/accepted journals, and academics do not duplicate/plagiarise and other things like protection of human and environment.

6. In other countries, resources/funds for research are made available on a competitive basis throughout the higher education sector according to institutional performance. What about Tanzania? How resources for research are made available to higher education institutions? / Modality of funding?

7. What other sources of fund, particularly for research your institution receive?

8. In reference to 7 above, how resources for research are remitted to your academics?

9. A HEI which encourages its academic staff to engage in research will formulate research policies, which among others, set research priority areas over a planned period and use attracting funding. Does your institution have a research policy? If it has, to what extent is the existing research policy viable to fostering a research culture in your institution?

10. In what other ways does your institution develop a research culture to academics? Can you share some examples? Do the approaches/strategies indicate viability i.e., improvement of university/faculty research productivity? Evidence?

11. How many research publications have you published in the last four years? What was the source of fund for research conducted, e.g., private donor, self-sponsored, government, foreign aid?

12. What are strategies employed by academic staff at your institution to disseminate the research findings beyond peer-reviewed publications?

13. What other factors which you think are vital for promoting a successful research culture in the Tanzanian higher education sector? What should the HEIs do to bolster a research culture?

14. What are the current challenges facing higher education institutions in Tanzania in relation to developing a research culture?

Appendix F: Interview Guide with Academic Staff Members

1. How is the career structure of academic staff at your institution organised?

2. What are the procedures adopted to evaluate academic staff?

3. Do existing academic staff assessment criteria take research into account? If yes, what weight does research have on decisions about academic staff's promotions and/or tenure?

4. If yes in 3 above, how does your institution define research that should be conducted by academics? And, what form/kind of research does your institution take into account in existing academic staff assessment?

5. If research is included, which obviously will be in the form of publications, among others, how does your institution and your office, in particular, ensure the quality of the publications, e.g., books, book chapters, journal articles across different schools/colleges/faculties/departments? E.g., articles used for promotion across all academics are only those published in quality/accepted journals, and academics do not duplicate/plagiarise and other things like protection of human and environment.

6. In reference to 5 above, is there a national framework to ensure the quality of publications across universities/HEIs?

7. In other countries, resources/funds for research are made available on a competitive basis throughout the higher education sector according to institutional performance. What about Tanzania? How resources for research are made available to higher education institutions? /Modality of funding?

8. What other sources of fund, particularly for research your institution receive?

9. In reference to 8 above, how resources for research are remitted to academics?

10. A HEI which encourages its academic staff to engage in research will formulate research policies, which among others, set research priority areas over a planned period and use attracting funding. Does your institution have a research policy? If it has, to what extent is the existing research policy viable to fostering a research culture in your institution?

11. In what other ways does your institution develop a research culture to academics? Can you share some examples? Do the approaches/strategies indicate viability i.e., improvement of university/faculty research productivity? Evidence?

12. How many research publications have you published in the last four years? What was the source of fund for research conducted, e.g., private donor, self-sponsored, government, foreign aid?

13. What are strategies employed by academic staff at your institution to disseminate the research findings beyond peer-reviewed publications?

14. What other factors which you think are vital for promoting a successful research culture in the Tanzanian higher education sector? What should the HEIs do to bolster a research culture?

15. What are the current challenges facing higher education institutions in Tanzania in relation to developing a research culture?

Appendix G: Focus Group Discussion Guide with Postgraduate Students

1. In general, the function and goals of HEIs/universities are teaching, research and service. What is the status of your institution? E.g., teaching-only, research-only, or it combines both teaching and research?

2. What do you know about the procedures adopted to employ and evaluate academic staff?

3. In other countries, resources for research are made available on a competitive basis throughout the higher education sector according to institutional performance. What about Tanzania? How resources for research are made available to HEIs and specifically to your institution?

4. A HEI which encourages its academic staff to engage in research will formulate research policies, which among others, set research priority areas over a planned period and use attracting funding. Does your institution have a research policy? If it has, to what extent is the existing research policy viable to fostering a research culture in your institution?

5. In what other ways does your institution develop a research culture? Can you share some examples? Do the approaches/strategies indicate viability i.e., improvement of university/faculty research productivity? Evidence?

6. What do you say about the intensity of research in the Tanzania's higher education institutions and your institution in particular?

7. Have you ever been involved in any research?

8. How many research publications have you published in the last two years? What was the source of fund for research conducted, e.g., private donor, self-sponsored, government, foreign aid?

9. What other factors which you think are vital for promoting a successful research culture in the Tanzanian higher education sector? What should the HEIs do to bolster a research culture?

10. What are the current challenges facing higher education institutions in Tanzania in relation to developing a research culture?

Appendix H: Document Search Guide

Document source	Document type	Document availability		Information sought/analysed
		Available	Not available	
Directorate of Higher Education Office – MoEVT & Quality Assurance and Accreditation Office – TCU	• National higher education policy • National Research and Development Policy			• Conceptions, goals and functions of higher education (HE) in Tanzania • Conception of research • Governance and management structures of HE in Tanzania • Financing of HEIs in Tanzania • Career structure and assessment criteria of university academics in Tanzania
	• A report on the funding of university for the past five years, and (if any) report on university research funding			• Source, amount and modality of university funding • Source, amount and modality of university research funding
	• National education budget for the past 5 years			• Trends in HE financing in Tanzania • Trends in university research financing
	• A recent university academic staff list showing staff qualifications, levels and expertise			• Universities' and country's human resource capacity for research and development • Extent of the country's commitment to promoting a research culture
	• University research and innovation reports for the past five years coming from universities/HEIs (if any)			• Extent of research and innovation productivity of universities • Existence of university research repository • Existence of national repository for research
	• Directives and circulars from MoEVT and TCU sent to the universities/HEIs, particularly related to promotion of a research culture (if any)			• MoEVT's and TCU's commitment to their role in promoting and facilitating research activities in universities • Support, universities receive from MoEVT and TCU, particularly related to research development
	• Prescribed procedures for establishment of a university • The general guidelines and minimum standards for provision of University education in Tanzania			• Requirements for registration and accreditation of universities • Guidelines on facilities, e.g., physical space, teaching and research resources, student-teacher ratio, etc. • Guidelines on time allocation/balancing between teaching and research, sources of fund, etc. • Career structure and assessment criteria of university academics in Tanzania

	• A recent list of accredited universities • Letters of university accreditation from the accredited universities			• Data on accredited universities, e.g., type, figure, nature of ownership, geographical location and date of institution accreditation • Criteria used for universities accreditation • Terms and Conditions of service for the accredited universities
Deputy Vice Chancellors' Office & Directorate of Research and Publications' Office	• University prospectuses			• Universities' Vision and Mission • Age of the institution, geographical location, accreditation status, and ownership category • Goals and functions of the institution • Governance and management structures of the institution • Academic staff qualifications, levels and expertise • Academic programmes on offer • Existence of research-based graduate programmes
	• Institutional research policies			• Evidence of university commitment to promoting a research culture • Described institutional structure for research • Established institutional code of conduct and research ethics
	• University research and publications' reports for the past five years			• Research productivity of universities • Existence of university repository for research • Types of research conducted at universities, e.g., donor-driven research, faculty-initiated research, home-grown/university-initiated research, government-initiated research, private sector commissioned research • Source (s) of research funding, e.g., individual academic, donors, government, private sector, university (scholarship, fellowship, research grant scheme), foreign technical aid
	• Report on the funding of university for the past five years • Report on the funding of academic/institutional research for the past five years			• Source, amount and modality of university funding • Source, amount and modality of university research funding
	• A recent university academic staff list showing staff qualifications, levels and expertise			• Universities' human resource capacity for research and development • Extent of university commitment to promoting a research culture

	• Directives and circulars from MoEVT and TCU sent to the universities/HEIs, particularly related to promotion of a research culture (if any)			• MoEVT's and TCU's commitment to their role in promoting and facilitating research activities in universities • Support, universities receive from MoEVT and TCU particularly related to the development of research
	• Letters of leave, e.g., study leave, sabbatical leave, special leave, workshop/seminar leave granted to academics in the past three years			• Support, academics receive from their institution, particularly related to the development of a research culture • Opportunities which exist in Tanzania's universities related to the development of a research culture
	• Guidelines for assessment of academic staff performance and promotion			• Prescribed criteria for academic staff assessment and promotion • The place of research in academic staff assessment and promotion • Terms and Conditions of service for different academic rungs
	• Academic staff promotion report for the past five years			• Criteria used for academic staff assessment and promotion • The weight of research in academic staff assessment and promotion
	• Institutional strategic plan for the present and coming five years			• The place of research in institutional strategic plans
	• Letters of academic demotion and/or disqualification from tenure on the ground of underperformance (if any),			• Reasons for academic staff demotion/expulsion • Evidence of university commitment to its function of monitoring performance of academic staff • The place of research in the so-called 'academic staff underperformance'
	• A recent postgraduate students' enrolment list showing degree programmes and specialisation			• Existence of research-based graduate programmes • Evidence of research activities in courses • University commitment to promoting a research culture
Deans' Office	• Faculty/School/College research and publications' reports for the past five years • A report on the funding of academic research for the past five years			• Research productivity of the Faculty/School/College • Existence of Faculty/School/College repository for research • Types of research conducted at Faculty/ School/ College, e.g., donor-driven research, faculty-initiated research, home-grown/university-initiated, government-initiated research, private sector commissioned research • Source (s) of research funding, e.g., individual academic, donors, government, private sector,

				university (scholarship, fellowship, research grant scheme), foreign technical aid
	• A recent Faculty/School/College academic staff list showing staff qualifications, levels and expertise			• Faculty/School/College's human resource capacity for research and development
	• Academic staff promotion report in the Faculty/School/College for the past five years			• Criteria used for academic staff assessment and promotion • The weight of research in academic staff assessment • Terms and Conditions of service for different academic rungs

Appendix I: Plain Language Statement

University of Glasgow | College of Social Sciences

1. Title of Project
The Development of a Research Culture in Tanzania's Higher Education System

2. Researcher's name and details
My name is Daniel Fussy. I am undertaking a postgraduate degree (PhD) at the University of Glasgow in the UK. My address is the University of Glasgow, School of Education, St. Andrew's Building, 11 Eldon Street, Glasgow, Scotland, UK. G3 6NH Email: d.fussy.1@research.gla.ac.uk

3. Invitation to participate.
I would like to invite you to take part in this research. Before you decide whether to take part or not it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish. Ask me or my supervisors if there is anything that is not clear or if you would like more information.

4. What is the purpose of the study?
There is growing consensus among policy-makers, scholars, educational stakeholders and other central socio-economic actors, at both the global and national level, that research is an important driver of country's economic growth and development, particularly in the present globalised and competitive knowledge-driven economy. As such, this study intends to establish ways in which Tanzania's higher education sector is developing a research culture and seeks views on how to improve the capacity of research within Tanzanian universities. Participants are invited to share their experience and views on the influence of Tanzania's higher education policy context on the development of a research culture, approaches used to promote a research culture in universities, and factors for building a successful research culture as well as obstacles. These views and experiences which are to be presented as the findings of this study are expected to bolster higher education policy and practices in Tanzania.

5. Choice of participants
You have been invited to take part in this research because you are either a policy-maker; a university leader; a member of academic staff; or a postgraduate student at one of the universities in Tanzania. As a policy-maker or university leader, you have been invited because you hold a critical position as a key formulator and overseer of national higher education policy. As a member of academic staff or a postgraduate student, you have been invited because you are the key recipient and implementer of national higher education policy at the university level.

6. Do I have to take part?
Taking part in this research is voluntary. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form which ensures your anonymity in the project, and that your responses will be confidential. If you decide to take part, you are still free to withdraw at any time without giving a reason.

7. What does taking part in the study involve?
I would like to invite you to take part in interviews (for a policy-maker; a university leader; a member of academic staff), or focus group discussions (for postgraduate students). The interview should take no longer than 40 minutes. For postgraduate students, the focus group discussion should take no longer than 50 minutes. Interviews and focus group discussions will take place at a mutually convenient location. Both interviews and focus group discussions will be audiotaped, however under the participants' consent.

8. Will my taking part in this study be kept confidential?
Yes. All data generated as part of the study will be anonymised and you will not be identified in the research nor the research publications and presentations.

9. What will happen to the results of the research study?
The results of this research will contribute to a thesis report. The thesis report will be used for the purposes of examination for the award of a doctoral degree. At a future time, parts of the completed research might be presented at a conference or submitted for publication in academic journals. Please note that in all future presentations or publications you will not be identified in any way.

10. Who is organising and funding the research?
The research is part of the general fulfilment for the award of a postgraduate degree at the University of Glasgow. The University of Glasgow, in Scotland, is facilitating the funding for this study.

11. Who has reviewed the study?
The study has been reviewed by the College of Social Sciences Ethics Committee of the University of Glasgow.

12. Contact for further information
Please feel free to contact the university's ethics officer and my research supervisors if you would like to raise any issues regarding the conduct of this research. These can be contacted as follows:

a) Research supervisors
Dr Margery McMahon, School of Education, University of Glasgow. St. Andrew's Building, 11 Eldon Street, Glasgow, Scotland, UK, G3 6NH
Tel: +44 (0) 1413303018, Email: Margery.McMahon@glasgow.ac.uk

Professor Christine Forde, School of Education, University of Glasgow. St. Andrew's Building, 11 Eldon Street, Glasgow, Scotland, UK, G3 6NH
Tel: +44 (0) 1413303427, Email Christine.Forde@glasgow.ac.uk

b) College of Social Sciences Ethics Officer
Dr Muir Houston, College of Social Sciences Ethics Officer,
School of Education, University of Glasgow, St Andrew's Building, Glasgow G3 6NH
Telephone: +44 (0) 1043304699, E-mail: Muir.Houston@glasgow.ac.uk

Thank you very much for reading this and taking part in this study

Appendix J: Consent Form

University of Glasgow | College of Social Sciences

Title of Project
The Development of a Research Culture in Tanzania's Higher Education System

Name of researcher: Daniel Fussy

1. I confirm that I have read and understand the Plain Language Statement for the above study and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
3. I understand that this study aims to protect my anonymity and confidentiality and that this will involve the secure storage of data and the use of a pseudonym or an ID number in any publication.

I consent to (please tick Yes or No):

- Being interviewed **Yes/No**
- The interview being audiotaped **Yes/No**
- Being involved in a focus group discussion **Yes/No**
- The focus group discussion being audiotaped **Yes/No**

Name of Participant: _____ Date: _____ Signature: _____

Name of Researcher: _____ Date: _____ Signature: _____

Appendix K: Ethical Approval from the University of Glasgow

CSS Oct 2013

University of Glasgow | College of Social Sciences

Ethics Committee for Non-Clinical Research Involving Human Subjects

Staff Research Ethics Application ☐ ***Postgraduate Student Research Ethics Application*** ☒

Application Details

Application Number: 400140032

Applicant's Name Daniel Fussy

Project Title An Investigation of the Development of a Research Culture in Higher Education in Sub-Saharan Africa: Experiences from Tanzania

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Application Status **Approved**

Start Date of Approval *(d.m.yr)* 1/12/14

(blank if Changes Required/ Rejected)

End Date of Approval of Research Project *(d.m.yr)* 1/12/16

Only if the applicant has been given **approval** can they proceed with their data collection with effect from the date of approval.

Recommendations **(where Changes are Required)**

- ***Where changes are required all applicants must respond*** in the relevant boxes to the recommendations of the Committee and upload this as the **Resubmission Document** online to explain the changes you have made to the application. All resubmitted application documents should then be uploaded.
- *(**If application is Rejected** a full new application must be submitted via the online system. Where recommendations are provided, they should be responded to and this document uploaded as part of the new application. A new reference number will be generated.*

(Shaded areas will expand as text is added)

MAJOR RECOMMENDATION OF THE COMMITTEE	APPLICANT RESPONSE TO MAJOR RECOMMENDATIONS

MINOR RECOMMENDATION OF THE COMMITTEE	APPLICANT RESPONSE TO MINOR RECOMMENDATIONS

University of Glasgow
College of Social Sciences
Florentine House, 53 Hillhead Street. Glasgow G12 8QF
The University of Glasgow, charity number SC004401

Tel: 0141-330-3007
E-mail: Terri.Hume@glasgow.ac.uk

REVIEWER COMMENTS *(OTHER THAN SPECIFIC RECOMMENDATIONS)*	APPLICANT RESPONSE TO REVIEWER COMMENTS

Please retain this notification for future reference. If you have any queries please do not hesitate to contact Terri Hume, Ethics Administrator.

End of Notification.

University of Glasgow
College of Social Sciences
Florentine House, 53 Hillhead Street. Glasgow G12 8QF
The University of Glasgow, charity number SC004401

Tel: 0141-330-3007
E-mail: Terri.Hume@glasgow.ac.uk

Appendix L: Research Permit from the University of Dar es Salaam

UNIVERSITY OF DAR-ES-SALAAM

OFFICE OF THE VICE CHANCELLOR

P.O. BOX 35091 ♦ DAR ES SALAAM ♦ TANZANIA

General: +255 22 2410500-8 ext. 2001
Direct: +255 22 2410700
Telefax: +255 22 2410078

Telegraphic Address: UNIVERSITY OF DAR ES SALAAM
E-mail: vc@admin.udsm.ac.tz
Website address: www.udsm.ac.tz

Ref. No: AB3/12(B)

Date: 16th December, 2014

TO WHOM IT MAY CONCERN

RESEARCH CLEARANCE

The purpose of this letter is to introduce to you **Mr. Fussy, Daniel** who is a bonafide student of the University of Dar es Salaam.

Mr. Fussy has been permitted to conduct research titled **"An Investigation of the Development of Research Culture in Higher Education in Sub-Saharan Africa: Experiences from Tanzania".**

The period for which this permission has been granted is from **December, 2014 April, 2015.** It will be appreciated if you will grant the researcher any help that may facilitate him to achieve his research objectives.

VICE CHANCELLOR
UNIVERSITY OF DAR-ES-SALAAM
P.O. BOX 35091
DAR-ES-SALAAM

Prof. Rwekaza S. Mukandala
VICE-CHANCELLOR

QUOTATION OF REF. NO. IS ESSENTIAL

Appendix M: Career Structure of Academic Staff in Tanzania

Cluster	Position	Qualification	Responsibilities
1	Tutorial Assistant	First Degree at First or Upper Second Division with a GPA of 3.8 or above plus interview.	• Understudying senior members through attending lectures, seminars, tutorials and practical training. • Assisting in supervision of tutorials, seminars and practical. • Assisting in research, consultancy and outreach activities. • Any relevant duties that may be assigned by the senior member of staff.
2	Assistant Lecturer	Master's Degree with a B+ performance at a GPA of 4.0 and above, potentially good academically.	• Conducting lectures, seminars, tutorials and practicals for undergraduate programmes. • Assisting senior staff in practicals, seminars and tutorials for postgraduate programmes as part of their learning and building capacities in various aspects of teaching, learning, research and public service. • Preparing case studies. • Working in co-operation with senior members on specific projects. • Supervising special projects for undergraduate students. • Conducting and publishing research results. • Assist in writing teaching manuals and compendia. • Attending workshops, conferences and symposia. • Any relevant duty that may be assigned by the relevant authority.
	Assistant Research Fellow	Master's Degree with a B+ performance at a GPA of 4.0 and above, potentially good academically.	• Preparing research proposals and carrying out research. • Supervising special projects for undergraduate students. • Teaching undergraduate students, where applicable. • Understudying senior members including attending lectures and seminars. • Organising conferences, workshops and symposia. • Any relevant duty that may be assigned by the relevant authority.
3	Lecturer	A PhD OR a minimum of 3 points from publications and good progress in PhD studies.	• Conducting lectures, tutorials, seminars and practicals for undergraduate and Masters Programmes. • Carrying out field supervision. • Mentoring junior staff in all relevant matters. • Participating in curriculum development. • Participating in developing and managing of various university projects. • Undertaking research and publishing research results. • Carrying out community/outreach services. • Undertaking consultancy. • Preparing teaching manuals and compendia. • Supervising undergraduate and postgraduate student projects. • Attending/organising workshops, conferences and symposia. • Any relevant duty that may be assigned by the relevant authority.
	Research Fellow	A PhD OR a minimum of 3 points from publications and good progress in PhD studies.	• Providing guidance to junior staff. • Identifying research areas. • Soliciting funds for research. • Preparing and publishing teaching manuals and compendia where applicable. • Any other relevant duty that may be assigned by the relevant authority.

4	Senior Lecturer	A PhD, a minimum of three years since the last promotion and at least 4 points from publications.	• Mentoring junior staff in all relevant matters. • Designing and developing curricula. • Managing of institutional projects and activities. • Writing teaching manuals and compendia and books. • Developing new courses and programmes. • Any other duty that may be assigned by the relevant authority.
	Senior Research Fellow	A PhD, a minimum of three years since the last promotion and at least 4 points from publications.	• Supervising undergraduate and postgraduate students including PhD students. • Organising research panels, symposia, and workshops. • Publishing teaching manuals, compendia and textbooks. • Plan and manage institutional research projects and activities. • Any other relevant duty that may be assigned by the relevant authority.
5	Associate Professor	A PhD, a minimum of three years since last promotion, and at least 6 points from publications since last promotion.	• Providing a leadership role to the institution. • Participating in the establishment of research hubs and resource centres. • Any other duty that may be assigned by the relevant authority.
	Associate Research Professor	A PhD, a minimum of three years since last promotion, and at least 6 points from publications since last promotion.	• Undertaking large-scale research projects. • Providing a leadership role to the organisation. • Providing guidance and advice to clients in the field. • Participating in the establishment of research hubs and resource centres. • Disseminating research findings to appropriate stakeholders. • Any other duty that may be assigned by the relevant authority.
6	Professor	A PhD, a minimum of three years since last promotion, and at least 7 points from publications since last promotion.	• Presenting Professorial Inaugural Lectures. • Establishing professorial chair in a relevant discipline. • Spearheading innovation and forecasting future development of the institution. • Establishing links to the other institutions. • Any other duty that may be assigned by the relevant authority.
	Research Professor	A PhD, a minimum of three years since last promotion, and at least 7 points from publications since last promotion.	• Planning and undertaking large-scale research projects. • Providing a leadership role to the organisation. • Taking a leading role in the development of the institution. • Monitoring of the dissemination of research findings. • Undertaking research and publishing research results. • Presenting Professorial Inaugural Lecture. • Establishing professorial chair in a relevant discipline. • Any other duty that may be assigned by the relevant authority.